FEB 5 1898

THE IRON TRADE REVIEW

VOLUME XXXI. CLEVELAND, O. FEBRUARY 3, 1898. CHICAGO, ILL. NUMBER 5

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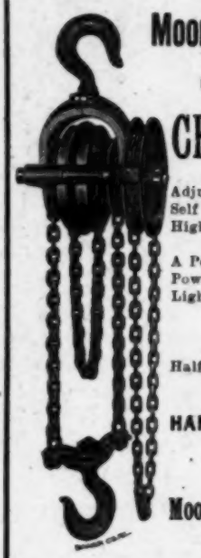

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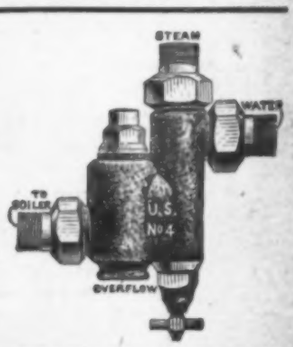

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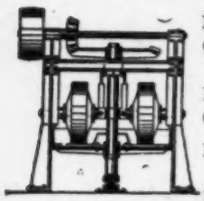

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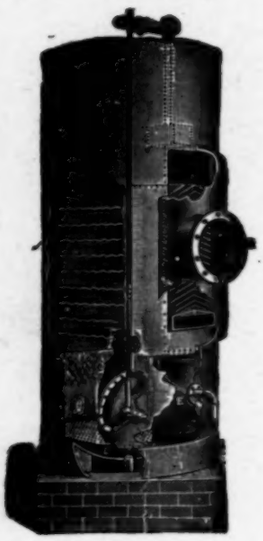

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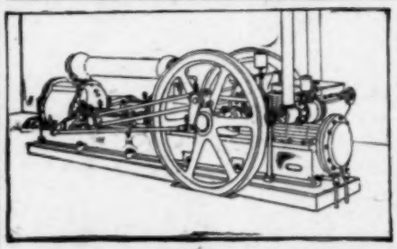

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THE IRON TRADE REVIEW

VOLUME XXXI. CLEVELAND, O. FEBRUARY 3, 1898. CHICAGO, ILL. NUMBER 5

THE WEEK IN IRON CIRCLES.

No noteworthy change has come over the iron market in the week, but for the time being the production side of the scale is the heavier. That fact may give a mixed situation for a few weeks, in the interval before the active season. The opening of February shows more active furnaces than were going Jan. 1, while the aggregate of new orders for finished material has not been quite up to the amount booked in December. Actual mill operations have been well sustained, however, and in some cases the orders yet to be rolled represent a smaller aggregate than at the end of December. Prices for finished iron and steel are better maintained in general than for pig iron. The latter shows more weakness and there is more disposition to press sales. Furnace companies that have accumulated metal lately, rather than meet some of the going prices—and this applies chiefly to Pennsylvania, Virginia and the Central West—have found that competitors are getting too much of the business, and there is some yielding where lines have been quite firm thus far. Bessemer pig iron is lower, sales at $9.10 and $9.15 at valley furnace being noted for early delivery, while at $9.25 deliveries extending past March have been secured. At $9.50 a sale has been made carrying deliveries into July. There has been considerable cutting in the East on foundry irons, some holders showing anxiety to realize. In the Central West, Southern irons have been moderately active, with concessions on No. 2 foundry, bringing the price down to $7 Birmingham and a shade below. The features of the market in finished material are activity in rails; an effort to get a higher price for bar iron, with some prospects of success later; a large contract in wrought pipe for the Indiana gas field; a good demand, with about $1 a ton advance, in wire and wire nails. Steel billets have yielded a trifle and Pittsburg quotations are about 25 cents lower, at $14.75 to $15. Considerable sales of steel are reported from the Chicago district. The meeting of bar iron manufacturers at Chicago was attended by representatives of about 60 per cent of the tonnage west of Pittsburg. It was agreed that conditions favor an advance and that the bar iron men, with a good business on their hands, ought to quit selling without a profit. A $2 advance was voted as desirable, and a second meeting will be held Feb. 9, at which it is expected to have practically all the Western mills represented. Meantime the arrangement made two months ago among Eastern bar iron manufacturers has become inoperative. Several good rail orders are pending, with the expectation that they will be closed this week. The L. & N. has placed 15,000 tons at Pittsburg. The advance in wire products is due to large present and prospective demand. Barb wire, in particular, promises a good season, in common with every product whose activity depends upon prosperity among Western farmers.

PITTSBURG.

OFFICE OF *The Iron Trade Review*, 807 TRADESMEN'S BUILDING, Feb. 2.

The last week of January was dull and in contrast with the beginning of the month. Better signs appear at its close in renewed inquiry and good buying of finished material. An advance in bar iron and a 75-mile gas line order for pipe are features of the week, locally. The pig iron market is weaker, particularly in Bessemer iron and accumulating stocks have led to some sales at very low figures.

PIG IRON.—Continued inactivity in Bessemer pig is telling increasingly as stocks accumulate, and prompt iron is being offered at a distinct decline from recent figures. For immediate shipment $9.10 and less, valley, are reported, while $9.15 has been done into the second quarter. Later deliveries are easier also and furnaces heretofore unwilling to quote for second and third quarters have come into the market with offers. A sale of 8,000 tons running beyond the second quarter is reported at $9.50, valley. A sale of 1,300 tons of gray forge at $9 delivered, in Pittsburg fairly represents both Pittsburg and valley markets. Pig iron quotations are made as follows, the freight from the valleys being 65c.:

Bessemer, prompt, valley	$ 9.05 to $ 9.15
" second quarter, valley	9 20 to 9.40
Bessemer delivered Pittsburg District,	9 90 to 10.00
No. 1 Foundry	10.50 to 10.65
No. 2 Foundry	10.00 to 10.25
No. 3 Foundry	10.00
Gray Forge	9.00 to 9.10

BILLETS.—The advance of two weeks ago has been lost again and billets are freely quoted at $15 makers' mill. A sale of 2,000 tons reported at $14.75, Pittsburg, or Wheeling option. Mills are said to be shading $15 slightly owing to an abrupt decrease in new business and a general disinclination on the part of consumers to specify.

SHEET BARS.—Many sheet mills have yet to buy for second quarter needs but the week has developed no inclination to cover. A delivered price of $18 is said to have been made where a 75 cent freight rate was attached. Pittsburg and valley quotations are $17 to $17.25, makers' mill.

RODS.—Rods continue scarce and Cleveland district mills are said to have refused orders owing to an inability to fill them. Delivered prices are reported from $23 to $23.50, and a general quotation of $22.50 to $23 is made.

BARS.—The reported bar iron advance affects the Pittsburg market but little. The valley interests were represented at the Chicago meeting and have since quoted 1.10c on common bar iron but the price is not established. Steel bars are very weak, 95c being openly quoted on desirable business. Mills better booked quote 1c.

RAILS AND TRACK MATERIAL.—The demand for links and pins has fallen off again and prices have receded to 1.20c. A rumor is current that the plan of rolling girder rails at the Homestead Steel Works is to be abandoned. The report, however, lacks confirmation. T-rails are firm at $18, Bessemer and pool rates are said to be in force tightly. On track material we quote as follows: Iron track bolts, 1.65c to 1.70c; steel spikes, 1.45c to 1.55c; splice bars, 1.10c to 1.15c; links and pins, 1.20c.

SHEETS.—The slack January in sheets is being felt and some extremely low prices have been accepted on sheets during the week. Less than 1.95c for No. 28 is reported and 1.95c is quoted. Galvanized are firm at 80 and 5 per cent off list.

STRUCTURAL MATERIAL.—The first report from beam pool members is due with the close of the calendar month. All January shipments not contracted for previous to Dec. 28 must be reported during the week to Commissioner Bailey, and the quota of each mill for February will then be announced. Poo

workings so far are said to be satisfactory and shapes are firm at the agreed rate, 3 to 15 inches, 1.15c; 18 to 24 inches, 1.25c; zees, 1.15c; tees, 1.20c. Universal plates are very active because of car building, and at Pittsburg mills 1.10c flat, isquoted. Inquiry is more active again for structural work, and some good orders on contract have helped out the week.

PIPES AND TUBES.—January closed in much better shape than it began and buying of boiler tubes and merchant pipe is much stronger than ten days ago. Inquiry, too, is heavier and mails show an increase. Old base discounts are quoted again as follows: Butt weld, black, 57 per cent off; lap weld, black, 67 per cent off; butt weld galvanized, 50 per cent off; lap weld galvanized, 55 per cent off. The additional discounts are 6 tens on small lots and 6 tens and 5 per cent on attractive orders. Discounts on merchant boiler tubes are as follows: 2¼ inch and smaller, 72½ per cent off; 2½-inch and larger, 75 per cent off. The line from Sistersville to Coraopolis is still pending and the inquiry for the line pipe is not yet on the market. A gas pipe line requiring 75 miles of various sizes of pipe was closed during the week, coming to a mill in the local district. The work is in Indiana.

PLATES.—Barring some good orders on contracts, plates have quieted down. Inquiry has been lighter in the last two weeks. Mills quote: Tank, 1c; shell, 1.10c; flange, 1.20c.

FERRO-MANGANESE.—Domestic ferro 80 per cent is quoted at $46.50 and $47.

SPELTER.—Sales of spelter were heavy and transactions are reported at $3.95. We quote $3.90 and $3.95.

OLD MATERIAL.—Good inquiry continues for all kinds of scrap particularly iron. Old iron rails are reported sold at $14 for 1,500 tons, while for 3,000 tons of old steel rails $10.25 was paid. The advance in bar iron prices is taken by dealers as an indication that bar mills are well booked and will require old material in larger quantities. Asking prices consequently are higher, although buying is smaller than a week ago. Cast scrap is quoted at $9.25 to $9.50, No. 1 wrought at $12, net; car wheels, $10.50 to $10.75, gross.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1142 MONADNOCK BLOCK, Feb. 2.

Very little change in conditions is noted from last week. The market is firm, and prics are not being cut, most mills and furnaces having quite full order books and a large inquiry still to be satisfied, so that they are not disposed to make concessions to secure business. Consumers appear willing to pay the prices asked without haggling, and are buying to satisfy their current needs, in many cases for their requirements for the next six months. In some branches of the market the producers are not anxious to dispose of their output for a very long time ahead at prevailing level, but prefer to sell only what they make from month to month, believing that prices will advance before long. The local mills have had a good week, having sold a large tonnage of billets as well as of other products. These mills are now well sold up for the first six months of this year on almost all of their products, and are taking only the most desirable business, as they can, to fill in.

PIG IRON.—There continues to be a good demand for all grades of iron and sales last week fully equaled those of the week previous. Among the orders closed were two or three of quite large tonnage, running from 1,500 tons down. An inquiry for 6,000 tons, or thereabout, has been received from one of the largest local iron melters, and with it came the request that the seller furnish with prices, etc., a full analysis of the irons to be furnished, and suggest a full mixture of irons to be used by the consumer in making his particular kind of castings. As few sellers are prepared to furnish all the irons ordinarily considered necessary in making a mixture such as this buyer wants, he may have some difficulty in getting what he wants from any one seller as he appears to desire. This buyer has heretofore bought entirely by fracture. The incident indicates the growing tendency on the part of buyers to become more exact in their foundry practice, and in doing so to make more use of chemistry in buying and mixing their irons. Most of the business closed last week was taken by the local furnaces although the Southern furnaces report no falling off in the demand. In Lake Superior charcoal iron little was done. The sale of 2,000 tons, reported last week, was made to an Indiana malleable iron foundry, and it is reported that the iron went at a figure below $11.25, Chicago. One other sale, a small one, was made at a price about as low, but most of the current business is said to be at higher prices. The furnaces appear to have settled on about a basis of $12, Chicago, as a fair price for their iron, under present conditions.

Lake Sup. Charcoal	$12 00@12 50	South'n Coke No. 3	$10 10@10 35
Local Coke Fdy. No. 1	11 00@11 50	Southern No. 1 Soft	10 60@10 85
Local Coke Fdy. No. 2	10 50@11 00	Southern No. 2 Soft	10 35@10 85
Local Coke Fdy. No. 3	10 25@10 50	South'n Silveries	11 25@11 50
Local Scotch Fdy. No. 1	11 50@12 00	Jackson Co. Silveries	12 50@14 50
Local Scotch Fdy. No. 2	11 00@11 50	Ohio Strong Softeners	12 00@12 25
Local Scotch Fdy. No. 3	10 50@11 00	Alabama Car Wheel	16 00@17 00
South'n Coke No. 1	10 60@10 85	Malleable Bessemer	10 75@11 00
South'n Coke No. 2	10 35@10 85	Coke Bessemer	11 50@12 00

BARS.—A meeting of bar iron manufacturers was held in Chicago last week, at which it developed that there is a unanimous belief on the part of the mills that present prices are too low. As the mills of the country were by no means all represented, at the meeting, no action could be taken to advance prices, but the mills represented agree to use every effort to secure at least $2 a ton over the prices prevailing on all business presented to them. Another meeting will be held here within a short time, at which it is hoped all the mills will be represented, and some ffort will be made to have them come to a price agreement, if possible. Some of the mills have stiffened slightly as a result of the meeting, but there has been no actual advance in prices. Sales last week were quite large, and included one contract to an implement manufacturer of 5,000 tons, together with several other smaller contracts. The demand is keeping up, and sales will undoubtedly be good for some time. The market is unchanged at 1.05c to 1.10c for common iron, although, as above, some of the mills are endeavoring to secure more than this; guaranteed iron is quoted at 1.10c to 1.15c, and soft steel bars from strictly billet stock, 1.10c to 1.15c.

CAR ORDERS.—Car contracts placed last week were none of them for large lots, although they made a good aggregate. Inquiries for car material are good, and sales of small lots are made frequently, but no large orders have been closed.

RAILS AND TRACK SUPPLIES.—Rail orders are currently believed to be very large, although no accurate information can be obtained from the mills or elsewhere as to the actual tonnage closed. It is undoubtedly quite large. The demand for small lots is good, and contracts for light sections are very frequent, and are of good size. Quotations are unchanged, as follows: Rails, $20 to $22.50, according to specifications; steel splice bars, 1.20c to 1.30c; track bolts, with square nuts, 1.80c to 1.90c; hexagon nuts, 1.90c to 2c; spikes, 1.60c to 1.65c.

BILLETS AND RODS.—The local mills took orders for from 12,000 to 15,000 tons of billets last week, and there is still a good inquiry. Billets are quoted at $17 to $17.50. There is a large demand for rods, but sales have been light, as none of the mills are anxious for business, and most of them are full for the next six months. Rods are nominally quoted at $23.50.

STRUCTURAL MATERIAL.—The week has been light, with only small orders for material of any kind. The Illinois Steel Co. is to erect a slabbing mill at South Works, which will take about 1,500 tons of material, the contract having been let to the Universal Construction Co., an offshoot of the steel company. The same company will build for the Illinois Steel Co. at Joliet, a roof for one of its mills that will take about 1,500 tons of material. Quotations are made as follows: Beams, 15-inch and under, 1.30c to 1.35c; 18, 20 and 24-inch, 1.40c to 1.45c; angles, 1.15c to 1.25c; plates, 1.15c to 1.20c; tees, 1.35c to 1.40c. Small lots from stock are quoted at one-quarter to one-half cent higher.

PLATES.—There has been a good demand, and orders have been quite large, including contracts up to 1,000 tons in size. Small order business has been very good also. Prices are made as follows: Tank steel, 1.15c to 1.20c; flange steel, 1.40c to 1.45c; fire-box steel, 1.85c to 5c.

SHEETS.—Business has been very satisfactory to the mills, although most of the sales called for only small lots. One or two moderately large contracts were closed. Quotations are made at 2.10c to 2.20c for No. 27 black and 80 and 10 per cent discount for galvanized.

MERCHANT STEEL.—There is very little change to report. The demand continues good. Prices follow: Open-hearth spring, tire and machinery steel, 1.65c to 1.75c; smooth finished machinery steel, 1.60c to 1.65c; smooth finished tire,

1.45c to 1.50c; tool steel, 5.50c to 7.50c; specials, 11c and upwards.

SCRAP.—The shortage of scrap, noted last week, continues, and seems likely to last for some time, as very little new scrap is coming into the market. The demand in the week has not been particularly heavy, as the immediate wants of buyers appear to have been satisfied. Dealers are looking for a heavy demand this month, and are wondering where the scrap is to come from. Some melters of scrap have been figuring on low grade pig iron to take its place, but no sales have actually resulted as a result of this figuring. Dealer's selling prices are as follows:

Old iron rails, gross,	$12 00@$12 50	Axles, net	$14 00@$14 25
Old steel rails, long, gr.,	10 50@ 11 00	Cast borings, net	4 00@ 4 25
Old steel rails, short	9 25@ 9 50	Wrought turnings, net	5 50@ 6 00
Old wheels, gross	11 00@ 11 50	Axle turnings, net	7 25@ 7 50
Railroad forge, net	12 00@ 12 50	Mixed steel, gross	7 00
Dealer's forge, net	9 50@ 10 00	Stove plates, net	6 00@ 6 25
No. 1 mill, net	7 50@ 8 00	Heavy melting steel, gr.	8 00@ 8 25
Heavy cast, net	8 50@ 9 00	Old iron splice b., net	13 25@ 13 75
Malleable cast, net	8 00@ 8 50		

CLEVELAND.

Office of *The Iron Trade Review*, 27 Vincent St., Feb. 2.

It is admitted that conditions in the pig iron market are not favorable to any considerable advance in ore for 1898. Neither, for that matter, is the furnace interest getting any assistance from the present situation, to help it in paying a higher coke price. In view of the weakness in pig iron it is not likely that any effort will be made to hurry ore matters. While no calculations are made by those best informmed, on the participation of Mesabi mines in the Bessemer association, there are consuming producers on that range who would be glad of some provision by which they could get a larger benefit from mine ownership than was possible last year. Two mines owned by furnace companies were idle through the year. Another mine—an independent property—producing excellent ore, always in demand heretofore, was kept closed in 1897 because of the very low price that resulted from the free competition on Mesabi ores. The repetition of the extreme figures of last season may not come, even without a Mesabi agreement, but the outlook for a profit for producers without railroad affiliations is not brilliant.

PIG IRON.—The weak condition of the Bessemer pig iron market continues, and the few sales reported are at prices quite out of relation to the present cost of materials and labor. The usual offers made for second quarter iron are declined without difficulty by most furnaces because even the best equipped furnaces can find no profit in them. What is needed is a buying movement involving 75,000 or 100,000 tons of metal. If, with their enormous present consumption of pig metal, one or two of the large steel companies should find it necessary to make a moderate purchase of iron for the second quarter, the situation would not be long in changing for the better. As it is, second quarter wants are covered to but a small extent and another month is likely to see considerable buying, at least by steel works having no blast furnaces. On prompt delivery iron $9.10, valley, has been done recently, and $9.15 to $9.20 for first quarter is about the market, with buyer and seller apart, on second quarter business, though on some $9.25 iron, deliveries have been secured extending beyond March. Foundry iron is unchanged at $9.25 for No. 2 and one or two sellers making concessions from this figure. Forge iron is held fairly at $8.60 to $8.75 at furnace, with a sale reported at $8.85, delivered, in the valley. There is a possibility of one or two stacks changing from Bessemer to forge iron. Southern forge is delivered at valley mill at $9.45. The activity in charcoal iron continues and prices made have shown the determination of producers to regain some of the ground recently taken by coke irons. We quote Cleveland deliveries:

Bessemer	10 15	Valley Scotch No. 1	$10 50@10 65
No. 1 Strong Foundry	10 25@10 50	Valley Scotch No. 2	10 00@10 15
No. 2 Strong Foundry	9 90@10 15	Gray Forge	9 25
No. 3 Foundry	9 40@ 9 50	Lake Superior Charcoal	11 50

FINISHED MATERIAL.—An 800-ton agricultural contract involving plates, bars, etc., has been placed through Cleveland offices the past week. Some bridge business is pending also, and plate orders calling for several hundred tons. Structural material has been only moderately active since the advance in price. The amount of optioned business that was supposedly under negotiation in December, before the beam pool was revived, proves to have been larger than was supposed. This is perhaps putting the case as mildly as it should be put. However, it would appear that on new business pool figures are being strictly maintained at 1.15c Pittsburg, for beams up to 15 inches, and 1c Pittsburg, rules for angles and universal plates. The Nickel Plate road has recently closed for about 1,200 tons of splice bars, divided between Cleveland and Chicago. Railroad wants are still responsible for steady activity in rolling mills, the car demand, together with track supply orders holding up well. Bar iron manufacturers are convinced that the time has come to get more money, but no actual advance appears in current transactions. It is expected a higher price can be fixed and maintained, as the result of later meetings. Old material holds the ground recently gained and quotations to mills are $14 for old iron rails, $10.50 for old steel rails; $11.75 to $12 for No. 1 railroad wrought scrap; $11 for old car wheels. The market for sheets is somewhat weaker. Mills have been more eager for business. No. 27 is now quoted 2c Cleveland, in average lots. Wire mill products are up about $1 a ton from last week. Demand for barb wire is strong and four-point galvanized is $1.70 to $1.75, mill. Smooth wire is quoted $1.20 to $1.25 and wire nails $1.45. The local mills are running full and the outlook is improving over January. Wire rods are still held at $23 and $23.50, with local mills unable to take business for early delivery. In wrought pipe, business is good locally. The City of Cleveland is opening bids to-day on 6,500 tons of cast iron pipe.

CINCINNATI.

February 2.

February has come in with every prospect of being a very satisfactory month. It is not often that there is enough buying in January to make it a noticeable month, but this year quite the contrary was the case. There have been very large sales and a buying movement is still in full force. It is steady, strong and regular and is well distributed throughout the general trade. There is a great diversity as to prices. Some of the largest furnace companies in the South are holding very stiff at the old schedule figures, saying they are entirely willing to see the others fill their order books up if they desire with low-priced business. At no time have the general conditions been so good as at the present. There is in all the South no iron producing company that is not fairly well sold ahead and there is not a single company that has any considerable stock on hand. No one is under any pressure to sell. However, it is a fact that the price of No. 2 foundry Southern iron in the past week has varied from $7.50 to $6.75, while gray forge has sold below $6.50. It is not believed, however, that these unsettled prices can continue very much longer. There is considerable interest manifested in Lake Superior charcoal iron, on account of the extremely low prices at which it is being offered, and in some sections quotations are not much above coke brands. It is expected that a larger consumption of that class of material will result, but it is not believed that more than four or five of the strongest companies can remain in operation. We quote for cash f. o. b. Cincinnati: Southern coke, No. 1 foundry, $9.75 to $10; No. 2, $9.25 to $9.75; No. 3, $9.25; gray forge, $8.75 to $9; mottled, $8.75 to $9; No. 1 soft, $9.75 to $10; No. 2, $9.50 to $9.75; Hanging Rock charcoal, No. 1, $14.50 to $15.50; Tennessee charcoal, No. 1, $12.50 to $13; Jackson Co. silvery, No. 1, $12.50 to $13; Standard Georgia car wheel, $14 25 to $15.

T. L. CONDRON, Chicago, resident engineer of the Pittsburg Testing Laboratory, Ltd., makes the following statement concerning the rumors circulated about the inspection of 35,000 tons of cast iron pipe manufactured for the city of Chicago, by the Addyston Pipe & Steel Co.: "Wide publicity having been given to the statement that six pieces of 36-inch pipe have been rejected after delivery, we requested the Commissioner of Public Works and the city engineer of Chicago, to thoroughly investigate the matter. After such investigation, the city engineer, Mr. John Ericson, has reported to the Commissioner of Public Works, Mr. L. E. McGann, that the Pittsburg Testing Laboratory, Ltd., have performed their duties in a satisfactory manner, and further that there is no cause for the rejection of any pipe previously accepted by their inspectors, except those broken in transit and handling."

THE IRON TRADE REVIEW

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WITH upward of 300 representative manufacturers present, and with reports and addresses that indicate a further crystallizing of its plans for the expansion of our manufacturing industries; with a reported membership of 640 in the past year; and with more attention given than ever by the press of the courntry to its proceedings, the National Association of Manufacturers may well look upon its third annual convention, held in New York last week, as marking the height of its career. No new objects were put forward, to enlist the association's striving, and there was need of none. The establishment of a ship-owning interest, that will secure direct transport of American manufactures to South American ports; the creation of a department of Commerce and Industry; the maintenance of American warehouses in foreign countries; the reform of patent laws; the extension of reciprocity in trade relations, the removal of the burden upon manufacturing, now existing in the form of State taxes upon corporations having other domicile—these are still the main objects of the association. Not a selfish programme, is this; that is to say, it is a programme whose carrying out will mean added prosperity to the whole country. There is nothing in the aim of the association that looks to special privilege or special exemptions for its manufacturer members; but such a united effort for American trade as shall make it more and more powerful abroad. The association has wisely avoided the pitfalls of politics and of non-essential side issues. It is a big, broad, united, aggressive movement of the brains of the manufacturing community for what belongs to it in the world's markets. And never were prospects brighter, for accomplishing what this association is set to do.

THAT school of economists which has been industriously preaching the doctrine of *laissez faire* in the United States in the past 25 years of industrial development, will find little in the international complications of the past few months, to indicate that its teaching is gaining ground. England has always felt that she could afford to have her own ports open to the world, and in her dependencies has always been willing that other nations should have leave to trade on the same terms as herself. But the policy has had no imitators among the important powers, and after years of vain endeavor to convert the world to free trade, Lord Salisbury confessed in 1892 that England had stripped herself of the weapons with which she might strive for the trade concessions other countries were winning. The English trade policy in China is just now put in sharp contrast with that of Russia and Germany, both of which powers, in their recent escapades with China have aimed primarily at trade advantage. To close certain ports to other nations has been the object of the recent maneuvers of Russia and Germany in Chinese waters; and while the United States is not singled out for retaliation, it is evident that the steady inroad of our manufacturers upon foreign markets is one of the incitements to the commercial warfare that is now embroiling all Europe. Not only is this country ready for the struggle, in respect to the merits and the cheapness of its products, but if the campaign is to be one of barter for trade privileges, the United States, with her tariff schedules, is amply equipped with trading capital. The framers of our protective system builded even wiser than they knew. They stimulated the domestic competition and invention that have brought to the country its unequaled mechanical advantages of to-day and its marvels of machine-wrought cheapness; and they have steadily maintained the levy of tribute upon those who would do business with our people, so that none of it need be abated except in return for substantial special advantages. This day of world-wide revival in trade thus finds the United States ready to make the necessity of every other country its opportunity for trade extension.

THE commercial and manufacturing worlds have been reminded by various occurrences of the past week that the currency question is the great unsettled problem before the people of the United States to-day. First came the Monetary convention of Jan. 25 at Indianapolis, with its strong declaration in favor of the Monetary Commission's currency reform bill, designed to remove all doubt as to what the standard of value in the United States is and is to be, and pronouncing unequivocally for gold. Then followed on Thursday night the speech of President McKinley, at the dinner of the National Association of Manufacturers, in which he said that the business interests of the country must insist upon a settlement of the currency question now or face the alternative that it must be submitted again for decision at the polls. The victory of 15 months ago, he said, was a command from the people to those in Government control, to preserve the existing gold standard, and "to maintain inviolably the obligations of the United States and all our money, whether coin or paper, at the present standard, the standard of the most enlightened nations of the earth." Not to attempt to build this declaration into legislation, the President declared, is to lose

valuable ground already won and practically to weaken the forces of sound money for their battles of the future. It is amazing, indeed, that there should have been any surprise at the President's decisive avowal for gold and for currency reform. Yet some of the statements in the Senate debate on the following day seem to take it for granted that declarations on finance are to be regarded as mere word jugglery. But the Senate's solemn performance (as solemn as though it had vitality and force), the third of the week's developments on this important question, surprised no one, neither did it cause any alarm. Coming on the day after the President's speech, it had the effect of a challenge to his call to embody in law the people's decision. To say that the bonds of the United States are payable at the option of the Government in gold or silver, only serves notice that the doctrine of confiscation by payment in dishonest currency is still alive and must be put down again. It was fitting that the fourth of the financial declarations of the week should follow so promptly the third. By the decisive majority of 50, the House, only three days after the passage of the free silver resolution in the Senate, buried it out of sight. Thus a six days round of financial agitation was completed. The upshot of it all is that the free silver heresy, against which the people uprose so mightily in 1896, is still stalking abroad. The Populist members of the Senate, most of whom stand for a rotten borough statehood, make it impossible to pass such currency reform acts as are needed to make the world sure of our intentions. The votes in Congress and the debate, what there was of it, only prophesy the forming of the lines for the Congressional battle of 1898 and the greater one two years later. Free silver had the help of industrial depression in 1896, as it will not have in 1898; and the outcome of the second contest will be like that of the first. But it is unfortunate that after the people have registered decisively and solemnly their demand that the money of the United States be equal to the best in the world, there is no possibility of giving that demand the vital force of an enactment. All that was done, in fact, by the victory of 1896, was to strengthen the cord by which the silver sword of Damocles is suspended over the business of the country, and make sure that the weapon should not fall. Yet more can be done in assuring the world of the purpose of the people to pay their obligations in honest money. Let the majority in the House, as the direct representative of the people, prepare such a measure of currency reform as accords with administrative sentiment and pass it, without regard to the fate it will meet in the Senate. If the campaign of the Populists and repudiationists is to be the constant agitation of their immoral proposals, let the friends of honest money be equally insistent and emphatic in embodying in bills the cure for our financial ills and in making every endeavor to apply them to the body politic.

Several Bucyrus steam shovels have been sold on the Mesabi range recently. The Duluth, Mesabi & Northern Railroad has bought one; another has been taken by the Lake Superior Consolidated Iron Mines, and a third will be put in at the Biwabik mine.

PERSONAL.

Ambrose Swasey, of the well knonw firm of Warner & Swasey, of Cleveland, president last year of the American Society of Mechanical Engineers, has just been elected a fellow of the Royal Astronomical Society of London. The telescopes of Warner & Swasey are known throughout the world. Last summer, while on the other side, Mr. Swasey made an address at a banuqet of the society which has just honored him.

London exchanges note the satisfactory business trip in England made by Robert Laidlaw, of the Laidlaw-Dunn-Gordon Co., Cincinnati, who recently returned to this country.

A. Roeper, of the firm of De Fries & Co., Dusseldorf, is in the United States, on a two month's tour making arrangements for the sale of American tools in Germany.

John Laird, the ship builder, of Birkenhead, died last week.

John Gearing, formerly with the J. Painter & Sons Co., of Pittsburg, has been made special manager of the Peoria Iron & Steel Co., at Peoria, Ill.

H. Kennedy, formerly superintendent of the 32-inch mill at Homestead, Pa., has been engaged to superintend the blast furnace plant of the Maripol-Nicopol Iron & Steel Co., Maripol, Russia, for five years.

Joseph Skewis, Sr., has resigned as superintendent of the Buhl steel mill, at Sharon, Pa., and becomes superintendent of the New Castle Steel & Tin Plate Co.'s plant.

H. R. Hall, one of the youngest and at the same time most progressive of blast furnace managers, has resigned as superintendent of the Carbon Iron & Steel Co.'s plant at Parryville, Pa., succeeds Chas. McCrery as superintendent of the Dunbar Furnace Co., Dunbar, Pa.

Edwin Norton, of Norton Bros., Chicago, has gone to Europe for a two months' trip.

Lake Superior Iron Mines.

The advance in wages at the Gogebic mines of the Oliver Mining Co —the Norrie group and the Tilden—which has been under consideration for some time, has been announced. It averages ten per cent.

The recent annual meeting of the Metropolitan Iron & Land Co. is the last that will be held at Milwaukee. Hereafter it will be in Pittsburg at the company's new offices, on the second Tuesday of January.

The organization of the Aurora Iron Mining Co. is unchanged for 1898. C. F. Rand is president and Howard Morris, secretary and general solicitor. The directors are, as heretofore, C. F. Rand, Fred T. Gates, James C. Colgate, C. W. Harkness, all of New York; L. H. Severance, of Cleveland; W. J. Olcott, of Bessemer, and Edwin H. Abbot, of Boston.

In spite of the low prices which prevailed in 1897 it is reported that the Minnesota Iron Co. earned above 6 per cent on its stock last year, and that dividends will be resumed, possibly in July.

The reported great find of ore at the Illinois Steel Co.'s Cundy mine is without foundation. The size of the ore body at this property has been well known and developed and mining work has been going on in the usual way.

At Section 26, on the Vermillion range, under option to the Oliver Mining Co., drill work is in progress, to determine the extent of the ore body.

The annual legislative squabble over iron ore matters is on in Minnesota. The question of ore freights is coming up first before the board of railroad and warehouse commissioners. Later it will probably come before the legislature.

CONTRACT has been awarded to the William Adams Co. for buildings to be occupied by the King & Andrews Co., Chicago, which expects to remove to Chicago Heights, Ill., by April 1. There will be a main building and a number of smaller ones surrounding it. The main structure will be 100x400 feet, of brick, stone, glass and steel. The King & Andrews Co. will employ regularly 200 men. The Chicago Heights Land Association is in correspondence with a number of European concerns, that are now for the first time considering the proposition of coming to the United States to avoid tariff duties on the goods they manufacture. Manager M. H. Kilgallen of the land association, is confident of locating at least one of these concerns before the expiration of the spring months.

FOUNDRYMEN'S DEFENSE ASSOCIATION.

At the meeting of foundrymen held in the club house of the American Society of Mechanical Engineers, New York City, Wednesday, Jan. 26, the National Founders' Association was organized. Most of those present were from Eastern foundries, but Detroit, Chicago, Pittsburg and Indianapolis were represented, there being about 40 persons in attendance. Wm. H. Pfahler, of the Abram Cox Stove Co , Philadelphia, presided, and John A. Penton, of Detroit, was secretary. To the labors of these two gentlemen is largely due the successful culmination of a movement that has in it large possibilities of good for the foundry employers and employes of the country. It will not be surprising if manufacturers in other lines at length come to see that the scheme has in it features worth their copying.

The objects of the meeting were well stated by Wm. H. Pfahler, who reiterated and enlarged upon some of the points brought out in his address before Western Foundrymen at Cincinnati, last October, and the one given by him at a New York meeting held some weeks ago. He said that the natural relations between employer and employes had been severed, not by the desire of the workmen, nor of their seeking, but because the manufacturer had allowed his employes to get beyond influences which he should have exerted, and to put themselves in the hands of demagogues, walking delegates, and agitators. He admitted, and he was a little ashamed to say it, that the manufacturers had gone on feeling that they were the only factor ; that the man who supplied the capital and the brains and the plant was the only element of great importance in the business. It must be realized that the employer without his employes is helpless, and that the two must be combined to produce the best results. In the revolution in industry which has gone on in the past 25 years, in the concentration of operations in fewer hands and the employment of large amounts of capital in single organizations, the workman can no longer look forward to the chance of proprietorship as men in the ranks formerly did. And in this condition, with the prospect of ownership and independence taken away, he has fallen into the hands of the man who has no argument for his welfare except that of the destruction of his employer. Every strike that has ever occurred in this country has had this thought at the bottom of it—that in order that the working man may be brought up his employer must be brought down. That idea is utterly false; but what are you giving your workmen in its stead? Think what the position of the agitator will be when the motto he has been pressing constantly upon your men—"In union there is strength"—becomes your motto; when he must tell your men that he is not going to lead them up against your shop alone, but against the combined forces of the manufacturers of the United States. "I thoroughly believe that just the moment you have organized this association upon that broad line with nothing else to it, you will have put into the hands of your honest workmen a weapon with which he will defeat the men who are your enemies and the disorganizers of society to-day.

"I have in the past two or three years placed myself in communication at almost every opportunity with the workingmen and with their leaders, and I feel more sure to-day than ever that the principle I am urging is right. The very determination that you will stand en masse against unjust leadership will go far toward solving the problem. The agitator, when he finds that this organization in a body will consider questions of labor from a basis of justice and right, will lose his occupation. I contend that an organization of this kind, that the bringing together all the brains that have developed the manufacturing interests of this country, must be a force for good when it takes into consideration that greatest of all the machinery you employ—the human hand. It is that thought alone that has led me to work as I have and get a body of men such as this together to agree to organize for the purpose of considering this great question, which in the future must have more thought than it ever had in the past."

Following Mr. Pfahler's remarks, which were received with enthusiasm and marked approval, the subject was discussed by A. J. Caldwell, of Henry R. Worthington, Brooklyn; C. L. Newcomb, of the Deane Steam Pump Co., Holyoke, Mass.; C. S. Bell, of the C. S. Bell Co., Hillsboro, O.; I. W. Frank, of the Frank-Kneeland Machine Co., Pittsburg; H. N. Covell, of the Lidgerwood Mfg. Co., Brooklyn; M. F. Moore, of Samuel L. Moore & Sons Co., Elizabeth, N. J.; and John R Russel, of the Russel Wheel & Foundry Co., Detroit. All spoke in favor of the plan of organization which had been presented. About two-thirds of those present announced that they would join the National Founders' Association, and Mr. Penton stated that letter pledges had been received from about 75 others. The plan of organization, which is to be modified as may seem fit, is practically that of the Stove Manufacturers' Defence Association. It provides for five districts, as follows: First—The New England States, except Connecticut. Second—Connecticut, New York and New Jersey. Third—Pennsylvania, Delaware, Maryland, District of Columbia and West Virginia. Fourth—Ohio, Indiana, Illinois, Michigan, Minnesota, Wisconsin, Iowa, Missouri, Kentucky and Tennessee. Fifth—Virginia, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas and Texas.

The annual dues are put at $100 and a reserve fund is provided, to which each member contributes 10 cents per month per molder employed. When difficulty between any member and his workmen arises, the member is to notify the chairman of his district and each member of the district committee. Within three days the committee meets at the plant of the member and if requested by him attempts a settlement of the trouble. If the workmen refuse to meet the committee, the latter shall have power to decide the matter at issue. If the committee decide in favor of the member and there is no settlement with the men, one of three plans of defense may be adopted: Making such work as the member requires; procuring men for him to run his works; compensating him for loss of production, and such other relief as may be thought desirable. The rate of compensation to a member with a strike on his hands shall be not more than $2 a day per molder. Other details are provided for in the constitution and by-laws, but the above indicates the general scope of the organization. Where a district committee decides against a member having difficulty with his employes, he may appeal to the council, but that body can only reverse the committee by a three-fourths vote.

The election of officers of the new association resulted in the choice of Wm. H. Pfahler as president, Mr. Pfahler agreeing to act, but only temporarily. C. L. Newcomb, of Holyoke, Mass., was made vice-president; W. H. Wells, treasurer, and John A. Penton, secretary. The district committees were made up in part, as follows: 1st District—Stephen Holman, L. E. Bellows, W. H. Carpenter—two places to be supplied. 2d District—A. J. Caldwell, M. F. Moore, Walter Perry—two places to be supplied. 3d District—Francis Schumann—four places to be supplied. 4th District—John R. Russel, Wm. M. Taylor—three places to be supplied.

Resolutions were adopted expressing appreciation of the co-operation of so many foundrymen in the movement and of the publicity given to the matter by the *Iron Age* and *The Iron Trade Review*. Preliminary arrangements have been made for holding meetings in Philadelphia, Boston, Pittsburg, Buffalo, Cleveland and other cities, with a view to presenting the objects of the movement to the local foundrymen and making additions to the membership.

It has been estimated that during the past year Europe has sent home to us not less than $200,000,000 in stocks and bonds, which our markets have been required to provide for, and which sum we would have been entitled to receive in gold but for the disposition of European holders to get rid of our securities. It is frequently said that these securities have been returned to us because of a lack of confidence in our maintenance of the gold standard, but lack of confidence in the earning capacity of many of our railroads has doubtless been fully as potential an influence in sending home our securities. —[Bulletin.

The department superintendents of the Homestead Steel Works held a meeting last week, and organized a club to be known as the "Homestead Steel Works Department Superintendents' Club." The organization is for mutual improvement and sociability. The following officers were elected: President, E. F. Wood; vice-president, A. R. Hunt; secretary, C. E. McKillips; treasurer, A. C. Dinkey. These four officers, with Reese James, will make up the board of directors. The club will meet once a month at the Hotel Carnegie.

PITTSBURG FOUNDRYMEN'S ASSOCIATION.

By arrangement of the executive committee the January meeting of the Pittsburg Foundrymen's Association held Monday evening, Jan. 31, took the form of a "Smoker." The association met in its quarters at the Builder's Exchange, with President Robert Taylor in the chair. Forty-two members were present as follows: Wm. Yagle, Wm. Yagle & Co.; J. S. Seaman, Seaman-Sleeth Co.; Dr. Richard Moldenke, McConway & Torley Co.; Howard M. Hooker, Rogers Brown & Warner; William Metcalf, Jr., Frank-Kneeland Machine Co.; Thos. D. West, Thos. D. West Foundry Co., Sharpsville, Pa.; Charles W. Friend, Clinton Iron & Steel Co.; Robt. Taylor, H. M. Wilson and H. J. Wilson, Taylor, Wilson & Co.; E. A. Uehling, Uehling, Steinbart & Co.; S. D. Sleeth, Westinghouse Air Brake Co.; Jas. McDonald, B. D. Fuller, Westinghouse Electric & Mfg. Co.; C. A. Stroh, MacIntosh, Hemphill & Co.; Jas. Altsman, James Collard; Samuel Robinson, Robinson Machine Co., Monongahela City, Pa.; Chas. S. Bauer, Sterritt & Thomas; Jas. R. Mills, Jr., *The Iron Trade Review;* S. H. Stupakoff, Union Switch & Signal Co.; Samuel W. Hay, Whiting Foundry Equipment Co.; James Gordon, President and William Morton, Ohio Sand Co., Conneaut, O.; G. W. Green, Jas. Rees & Sons Co.; Geo. E. Brush and Mr. Stevens, Brush & Stevens; John Buchanan, Allegheny Foundry Co.; Jno. R. Gilmour, Hydraulic Machine Co.; Mr. Awll, Brownsville, Pa; Mr. Daniels, Logan Strowbridge, New Brighton, Pa.; E. A. Kebler, Matthew Addy & Co.; R. B. Lean, Crescent Foundry & Construction Co.; T. E. Malone, J. S. McCormick Co.; P. Pflaum, Ft. Pitt Smelting & Rfg. Co.; Jno. N. Early, James S. Early, Wm. Early & Sons; Frank Anzhutz, Geo. N. Barr and E. F. Neuhoff, Anzhutz-Bradbury Co.

Throughout the business session and the discussion of the evening's subject the smoking feature of the meeting was enjoyed. It was announced that the executive committee had filled the vacancies in its membership due to the resignations of Messrs. James Boyle and Shaw by electing Dr. Richard Moldenke of the McConway & Torley Co., and Mr. Charles Bailey, chairman of the Reliance Steel Casting Co.

Mr. Thos. D. West presented discussions of two topics that have been under consideration in recent meetings. One took the form of a paper on "Oxidation of Foundry Metals." The other was on "The Effects of Phosphorus on the Strength and Fusibility of Iron." The former is printed on another page. The second paper will appear in our next issue.

The executive committee announced four valuable papers for future meetings. In February, Mr. E. A. Uehling will read a paper on "Sandless Pig Iron," and in March, Charles W. Friend will present a paper on "Foundry Iron." Later papers will be: "Some Difficulties Encountered in Testing Cast Iron," by Paul Kreuzpointner, of Altoona, Pa.; and "Foundry Appliances," by S. H. Stupakoff, of the Union Switch & Signal Co., Swissvale, Pa.

At the conclusion of the reading of the papers, Mr. West explained in more detail his experiments and Dr. Moldenke the tests and analyses, and both were asked questions on points touched in the papers.

Mr. Friend inquired whether sulphur would not be increased in a chilled pig, his opinion being that sand might protect the iron before melting.

Mr. Metcalf made the observation that melting down a chilled roll always seemed to give more slag than a sand roll.

Mr. Uehling maintained that the added strength of the test bar, as cited in the paper, was brought about by the changing of some of the graphitic to combined carbon uniformly throughout the bar, whereas mechanical means of bringing about this change would affect only the outer portion. Hence strains usually found as a result of mechanical chilling would be wanting. Continuing, Mr. Uehling showed the reliability of Mr. West's experiments on oxidation by presenting the following table of the losses calculated from Mr. West's results:

	Per cent.	Ave'ge.
Sand iron loss	5.10	
" " "	6.09	
	11.19	= 5.595
Lime wash "	3.93	
" " "	3.60	= 3.765
Graphite wash loss	3.49	
" " "	3.36	= 3.425
Sandless iron "	3.40	
" " "	3.54	
" " "	3.49	
" " "	3.47	
" " "	3.78	
" " "	3.68	
" " "	2.88	
" " "	2.92	= 3.395
Soda silicate wash loss	2.97	
" " " "	2.78	= 2.875

This table, it was contended, showed the remarkable accuracy attained with even such small heats. Mr. Uehling further explained the reason why chilled pig would not waste as much as the sand pig. This, he said, was due to the fact that a slight formation of oxide of iron in the case of the sand pig would immediately cause a slagging action, the iron thus being absolutely lost, whereas in a chilled pig the oxide coming in contact with incandescent carbon would be reduced back to iron again. Here also would come the advantage of plenty of fuel to keep the flame as constantly up to the reducing as possible.

Following the discussion of the papers lunch was served in an adjoining room of the Builders' Exchange. Thanks were voted *The Iron Trade Review* for printed copies of the papers of the evening.

RECEIVED FROM THE TRADE.

The Pittsburg Feed Water Heater & Engineering Co. describes with considerable detail in its catalogue, the Pittsburg feed water heater and purifier, open and closed types, and the Pittsburg live steam purifier. A general description of the heater and purifier has appeared in these columns. It is cylindrical in shape, and in the upper part contains a series of pans made of cast iron. Where the water contains acid a shell or jacket of cast iron is employed, which is calculated to resist corrosion better than a steel or wrought iron shell. The catalogue illustrates also the combined heater, purifier and receiver. The surplus steam above that required to heat the water for the boiler may be used for heating, drying, and other purposes; and the condensation of water resulting may be returned to the receiver, so that no heat is lost and further economy is effected. Sectional drawings of the devices of the company are given in the catalogue and a list of users, with a number of testimonials. J. E. Schlieper, M. E., is the patentee and manager. James Bonar & Co., Carnegie, Bldg., Pittsburg, are general sales agents.

The ornamental calendars for 1898 are still making their rounds, and this method of trade publicity continues to be popular. From the Beckwith stove plant at Dowagiac, Mich., comes a handsome reproduction in color, of an oil painting "The Vanguard," in the possession of a member of the firm. This forms the head-piece of the calendar card. The Ashton Valve Co., Boston, reproduces the artistic companion pieces "Sunshine and Shadow." R. D. Nuttall Co, Pittsburg, has its specialties displayed in a well designed engraving, naming particularly its gears, pinions, bearings and brasses and showing an electric car as representative of its trolleys, trolley poles, trolley harps and wheels. Reese, Hammond & Co., who have made their calendars noteworthy with fine engravings, present as the art piece for 1898 a view of the cruiser Philadelphia. The company's high grade fire brick, tile and ground clay are advertised, grate settings, stove linings, cupola blocks, mill brick and coke oven brick being named as specialties. The Oak Hill Fire Brick & Coal Co., Oak Hill, O., issues bi monthly calendar cards, that for January being in buff.

F. H. Smith, proprietor of Smith's Pattern Works, Akron, O., is sending to the trade a neat wallet which carries an announcement concerning the Smith leather fillet for pattern-makers, founders and machinists.

The Cleveland Galvanizing Works of H. H. Hodell, Cleveland, have issued a neat pamphlet illustrating their pump chains and rubber buckets, galvanized lightning rods and fixtures. The value of the mild purifying cups manufactured at these works is emphasized, the water being purified by carrying air through it to the bottom of the well or cistern. Attention is called also to the facilities of this plant for galvanizing work of all kinds.

Pig Iron Production in 1897.

Tables showing pig iron production in the United States in 1897, stocks on hand at the close of the year, and interesting details concerning the relative outputs of the various kinds of iron in the various sections, are given in the Jan. 30 issue of the *Bulletin*.

The total production of pig iron in 1897 was 9,652,680 gross tons, against 8,623,127 tons in 1896, 9,446,308 tons in 1895, 6,657,388 tons in 1894, 7,124,502 tons in 1893, 9,157,000 tons in 1892, 8,279,870 tons in 1891, and 9,202,703 tons in 1890. The production in 1897 was 1,029,553 tons more than in 1896, an increase of almost 12 per cent. The increase was almost wholly in the last half of 1897, as will be seen from the following table of half-yearly production in the last four years.

	1894.	1895.	1896.	1897.
First half	2,717,983	4,087 558	4,976,236	4,403.476
Second half	3.939.405	5,358,750	3,646,891	5,249,204
Total	6,657,388	9,446,308	8,623,127	9,652,680

Large as was the production of pig iron in the second half of 1897, it was exceeded in the second half of 1895 by 109,546 tons. The output by States and the number of furnaces in blast at the close of the year are shown in the following table:

TOTAL PRODUCTION OF PIG IRON.

States.	Blast Furnaces. In blast June 30, '97	Dec. 31, 1897. In	Out	Total	Production. Gross tons of 2,240 lbs. (Includes spiegeleisen.) First half of 1897.	Second half of 1897.	Total for 1897.
Mas achusetts	1	1	2	3	1,702	1,582	3 284
Connecticut	2	3	2	5	3,172	5,164	8,336
New Y rk	4	4	14	18	108,979	134,375	213,304
New Jersey	4	4	6	10	37.863	57,833	95,696
Pennsylvania	61	76	88	164	2,149,252	2,482,382	4,631 634
Maryland	3	2	6	8	80,313	113,169	193,702
Virginia	8	8	19	27	153,472	154,138	307,610
North Carolina			2	2			
Georgia	1	1	3	4	8,141	8,951	17,092
Alabama	16	19	26	45	436,505	511,326	947,831
Texas	1	....	4	4	2,684	3.571	6,175
West Virginia	2	3	1	4	53.735	79,172	132,907
Kentucky	2	3	6	9	17,185	18,714	35,899
Tennessee	7	7	12	19	140,431	131,699	272 130
Ohio	20	33	23	56	593,962	778,947	1,372,889
Indiana			1	1			
Illinois	9	15	2	17	519,671	597,568	1,117,239
Michigan	4	5	8	13	62,531	71,047	132,578
Wisconsin	1	4	2	6	29.773	74.136	103,909
Minnesota			1	1			
Missouri		2	1	3	5,215	18,668	23,883
Colorado		1	2	3		6,582	6,582
Oregon			1	1			
Total. 1897	146	91	232	423	4.403 476	5,249,204	9,652,680
Total. 1896	196	159	311	470	4,976,236	3,646,891	8,623,127

Production according to fuel, in 1897, is shown in the table below, as well as unsold stocks according to fuel, on hand at the end of the four half-year periods terminating June 30, 1896, Dec. 31, 1896, June 30, 1897, and Dec. 31, 1897, respectively:

UNSOLD STOCKS AND PRODUCTION ACCORDING TO FUEL.

Fuel.	Stocks. Gross tons of 2,240 lbs. June 30, 1896.	Dec. 31, 1896.	June 30, 1897	Dec. 31, 1897.	Production. Gross tons of 2,240 lbs. (Includes spiegeleisen.) First half of 1897.	Second half of 1897.	Total for 1897.
Bituminous	390,883	383,928	446,114	339,793	3 804,882	4,659,810	8,464,692
Anthracite	113,311	134,687	143,590	100,901	473,837	458,940	932,777
Charcoal	140,693	193,034	237,459	209 795	124."57	130,454	255,211
Total	644,887	711,649	827.163	656,489	4.403.476	5,249,204	9,652,680

The stocks of pig iron which were unsold in the hands of manfacturers or their agents on Dec. 31, 1897, and which were not intended for their own consumption, amounted to 656,489 gross tons, against 827,163 tons which were similarly held on June 30, 1897, and 711,649 tons on Dec. 31, 1896. These figures of unsold stocks do not include pig iron sold and not removed from the furnace bank, nor pig iron manufactured by rolling mill proprietors for their own use.

In addition to the stocks of pig iron above noted, as unsold on Dec. 31, 1897, there should be added 218,489 tons in the yards of the American Pig Iron Storage Warrant Co., which had passed out of the hands of the makers, making 874,978 tons which may be said to have been then on the market, against 973,678 tons which were similarly held on June 30, 1897, and 847,686 tons on Dec. 31, 1896. The total quantity of stocks in warrant yards on Dec. 31, 1897, was 275,800 tons, against 221,600 tons on June 30, 1897, and 200,700 tons on Dec. 31, 1896.

The distribution of stocks of unsold iron in the last four half-year periods is shown in the following:

STOCKS OF UNSOLD PIG IRON.

States.	Gross Tons of 2,240 lbs. June 30, 1896.	Dec. 31, 1896.	June 30, 1897.	Dec. 31, 1897.
New England	8,447	7.989	9.073	8,103
New York	36,940	47.837	72,658	36.444
New Jersey	7 015	5,467	10.752	7.730
Pennsylvania	243,800	215.959	197,634	208,860
Maryland	1,435	1,544	1,209	2 179
Virginia	51,499	43.236	67,615	70 509
North Carolina, Georgia and Texas	19,757	18,800	20,104	16,791
Alabama	91,669	122.079	129,223	56,020
Kentucky	15,344	14,800	12 741	10,546
Tennessee	11,611	29,763	55,054	25,008
Ohio	113,111	118,664	119,035	76,238
Michigan, Indiana and Minnesota	38,656	64,035	101,603	109,272
Illinois and Wisconsin	7 809	15,233	24,173	12,939
Missouri and Colorado	5,593	5 652	5,103	14,663
Pacific States	1,191	1,191	1 187	1,167
Total	644,887	711,649	827 163	656.489

In unsold stocks of charcoal pig iron on Dec. 31, 1897, Michigan, as the State in which over 50 per cent of the charcoal iron of the country is made, led with 109,272 tons, a gain of 45,237 tons over Dec. 31, 1896. Wisconsin had 12,939 tons. This makes a total of 122,211 tons of Lake Superior charcoal iron against 125,776 tons on June 3, 1897; 78,800 tons Dec. 31, 1896; 36,435 tons June 3, 1896; 29,994 tons Dec. 31, 1895, and 60,017 on June 30, 1895. In coke iron stocks, Pennsylvania had the largest amount—122,771 tons—at the close of the year; Ohio had 65,935; Maryland and Virginia had 69,489; Alabama, Georgia, and North Carolina, together, 44,070 tons. The decrease in unsold stocks of coke iron in the year was 44,135 tons. As compared with coke stocks of June 3 (446,114 tons), those of the end of the year were 106,321 tons less.

The production of Bessemer pig iron in 1897 was 5,795,584 tons, against 4,654,955 tons in 1896, and 5,623,695 tons in 1895. The increase in 1897 over 1896 was 1,140,629 tons.

PRODUCTION OF BESSEMER PIG IRON.

States.	Gross tons of 2,240 lbs. 1st half 1897.	2nd half 1897.	Total for 1897.
Pennsylvania	1,503.219	1,931,711	3.434.930
Maryland	58,222	92 883	151,105
West Virginia	53.735	79,172	132,907
Kentucky			
North Carolina			
Ohio	416,782	611.115	1,027,897
Illinois	461,917	556,074	1,017 991
Michigan and Wisconsin	2,103	17,069	19 172
Missouri		5,000	5,000
Colorado		6,582	6,582
Total	2,495.978	3,299,606	5,795,584

BESSEMER PRODUCTION IN PENNSYLVANIA AND OHIO.

Pennsylvania.	Lehigh Valley	59,718	46,767	106,485
	Schuylkill Valley	32,833	38,390	71,223
	Upper Susquehanna Valley	40,222	51,079	91,301
	Lower Susquehanna Valley	87,956	121,098	209,054
	Juniata Valley			
	Shenango Valley	165,311	287,814	453,125
	Allegheny County	965,219	1,225,384	2,190,603
	Miscellaneous bituminous	151,960	161,179	313,139
Ohio.	Mahoning Valley and H. Rock bit.	155,248	231,270	386,518
	Hocking Valley	2,420		2,420
	Lake Counties	118,304	159,005	277,309
	Miscellaneous bituminous	140,810	220,840	361,650

The production of basic pig iron in 1897 was 556,391 tons, against 336,403 tons in 1896. The production of 1897 was distributed as follows: New York and New Jersey, 79,041 tons; Allegheny county, Pa., 265,548 tons; other counties in Pennsylvania, 84,520 tons; Maryland, Virginia, and Alabama, 97,562 tons; and Ohio, Illinois, Wisconsin, and Missouri, 29,720 tons.

The production of charcoal pig iron in 1897 was 255,211 tons, against 310,244 tons in 1896, a decrease of 55,033 tons. The production of spiegeleisen and ferro-manganese in 1897, was 173,695 tons, against 131,940 tons in 1896, and 171,724 tons in 1895.

The limestone consumed for fluxing purposes by blast furnaces in 1897 in the production of 9,652,680 tons of pig iron amounted to 4,247,688 gross tons, of which 3,680,666 tons were consumed by the bituminous coal and coke furnaces in the production of 8,464,692 tons of pig iron, 524,271 tons by the anthracite and mixed anthracite and coke furnaces in the production of 932,777 tons, and 42,751 tons by the charcoal furnaces in the production of 255,211 tons.

SEMET-SOLVAY PROCESS OF COKE MAKING.*

The Semet-Solvay coke ovens are rectangular in shape, 30 feet long, 5½ feet deep and 16 inches thick. They are completely surrounded, the top excepted, by a complicated system of flues, these being separated from the coking chamber by thin tile walls, about three inches thick. Coal is emptied into the retorts through three hoppers at the flues surrounding the retorts. Usually 8 to 10 of these ovens are banked together, each with its system of flues being separated from the next by solid walls about one foot thick, which serve to retain the heat. The heat attained in the flues is from 2,200 to 2,400 degrees F. and in the cooking chamber about 2,000 degrees F. These retorts are closed at both ends, at one end by a slide door, at the other by one resembling a safe door. When coking is completed, the slide door is lifted and a piston of the shape of the coking chamber enters when the other door is thrown open and the coke pushed out. The doors are then closed and the retort is ready for another charge without any appreciable loss of heat. The first cost of a Semet-Solvay oven is about $1,550, the necessary ammonia condensers cost about $1,550 per oven, making a total cost of $3,100, as against $325 per oven for the old bee-hive process. The bee-hive ovens require extensive repairs after a few years' use, while the Semet-Solvay ovens will run ten years without material repairs. The Semet-Solvay oven cokes about four tons of coal at a charge in 24 hours, while the bee-hive oven cokes only two tons of coal in from 42 to 78 hours, the yearly output, therefore, of the former is about four times that of the latter. The coking chamber of the improved process having a larger surface exposed to the fire makes a much more uniform coke than the bee-hive. Having the advantage also of 5½ feet depth the pressure on the underlying coke is considerable and it is made harder and more dense than coke from the bee-hive oven.

Coking by this improved process takes place must like the freezing of ice, in that it cokes first at the side and later at the middle. As the gases are given off at the center only this portion of the coke is very porous. By actual tests it has been found that coke made by the Semet-Solvay methods possesses a decided advantage in the production of iron. By one test it was found that 546,150 pounds of bee-hive coke were consumed in producing 253 tons of iron, whereas Semet-Solvay coke from the same coal produced 260 tons of iron with the consumption of only 421,463 pounds of coke. The useful by-products saved are ammonia, tar and an excellent fuel gas. The quantity of each produced per ton of coal is 9.88 pounds ammonia sulphate, 43.5 pounds of coal tar and from 9,000 to 10,000 cubic feet of fuel gas. About 40 per cent of this gas is required to furnish heat for the coking oven, leaving 60 per cent as an article of commerce. The market value of by-products saved and available for sale is 48 cents per ton of coke. From a recent experiment with a 12-oven plant the net ultimate cost of coke per ton was 18¼ cents, while the net ultimate cost of bee-hive coke is about 40 cents. It is estimated that with a larger plant the net ultimate cost by the improved process could be materially reduced. The importance of the Semet-Solvay process as tending to solve the vexing question of smoke nuisance in large cities should be seriously considered. In cities where coal could be obtained at a reasonable cost, such a plant could be established to furnish gas for domestic use and coke for the manufacturers, and at the same time do away with smoke.

F. R. Bowes & Co., dealers in iron and steel, and agents for manufacturers, 93 Lake st., Chicago, have issued a booklet containing standard lists of prices, weights, and sizes of various iron and steel products, together with a buyer's price memorandum. The hand-book is very complete and at the same time concise, and will be appreciated by the trade.

Connellsville coke production is stationary. For the week ending January 22, it is estimated at 156,265 tons from 15,099 active ovens, out of 18,608. The shipments were 8,364 cars, an increase of 136 over the preceding week.

* Abstract of a paper read before the Engineering Association of the South, Jan. 13, by Dr. Wm. L. Dudley, of Vanderbilt University.

WEARING OF TIN PLATE ROLLS.

It is a well-known fact that the tin plate rolls as they are used in the United States really wear away on the surface which comes into actual contact with the steel being rolled. When a tin plate roll comes to be turned in the lathe after a week's service it is found necessary to remove a considerable quantity of metal from the cylindrical surface at the ends, while from the central 21-inch a much smaller quantity requires to be taken off. The packs in passing between the rolls, seem to have worn a groove in each one. This is true to such an extent that even after a very few days' use on packs of a given width it is impossible to do anything like satisfactory work on wider packs because their edges will be pinched. * * *

To overcome this wearing away of the roll as much as possible, the only recourse is to use the roll at a lower temperature. The effect is not noticed, at least to nearly as great an extent, in Wales, where the rolls are not subjected to as high a temperature, on account of their being two stands of rolls to a mill, and because there is a smaller output per turn. The roll maker cannot of course produce a roll which will stand a higher temperature. It is in the nature of the chilled iron to act as it does.

The rolls in a tin mill may be kept at a lower temperature in any of several ways, any of which is open to more or less objection: (1) The output per turn may be decreased; (2) either the diameter or length of the roll, or both, may be increased; (3) the speed of the rolls may be increased; (4) the number of passes may be reduced; (5) the rolls may be artificially cooled; (6) two stands of rolls may be employed for the same work. The main objections to doing these things are that to reduce the output means a lessened profit all around; to increase either the diameter or length of the rolls means increased cost, while the increased diameter may mean a less perfect roll, and the longer roll means more difficulty in maintaining the contour; to increase the speed (thus reducing the heating effect of each pass) means less regular reduction; no good means for artificially cooling rolls has yet been brought out; the use of two stands increases the cost, and there is difficulty in getting them to work together, unless water is run on the roughing rolls, which is also objectionable. There is, moreover, a general objection to working with rolls at a low temperature, in that the steel is cooled more rapidly by contact with the rolls and does not therefore maintain its heat so well for successive passes. Besides this, it seems probable that there is really more danger of breaking rolls which are run at comparatively low temperature than those that are run at a high temperature.

The safest temperature at which tin plate rolls can be worked is that temperature at which the variations in temperature are least. The greater the difference in temperature between the steel being rolled, and the roll, the more rapidly will heat be transmitted to the roll. The amount of heat transmitted is directly proportioned to the difference in temperature. If both are at the same temperature, no heat will be transmitted. From this it follows, that iron at 1,000° will affect a roll at 600° twice as much as a roll at 800°, and a sudden period of unwonted activity on the part of the crew will be more likely to break a roll at 600° than one at 800°. This is only one feature of the case, but it is an important one. Nevertheless, there is really little excuse for breaking a tin plate roll in any case, unless it is a poor roll, and then it will certainly give way soon after it is put in operation. To claim defective manufacture for a roll which has broken after considerable service, when the weakening effect of the chill has been reduced by annealing, and by bodily removal, is foolishness.—[Tin and Terne.

The annual meeting of the Technical Club, of Chicago, was held at the club house on Jan. 18. The election of officers resulted as follows: Robert W. Hunt, president; C. F. Quincy, first vice-president; C. E. Billin, second vice-president; Jas. F. Lewis, treasurer; directors to fill vacancies, E. M. Hagar, J. W. Dickinson and Jas. R. Chapman; directors for the ensuing three years, Onward Bates, S. P. Wells, Jr., Wm. Rhodes and L. A. Ferguson. The reports of the retiring officers show the club to be in excellent financial condition, and to have made considerable growth in non-resident and resident membership in the past year.

OXIDATION OF FOUNDRY METALS.*

BY THOS. D. WEST.

The amount of iron lost by melting is as important an item to study in these days of sharp competition, as that of any other material necessarily destroyed in the making of castings. Many founders endeavor to keep a close record of such losses; but there are many that cannot. Founders that can clean up every day's "heat" of castings and collect in all fine shot, scrap and gates daily, are in the best position to attain the greatest accuracy in such records. Take shops that have castings lying in the sand from one to six days or more before they can be removed or cleaned up, they find the task a much more difficult one. Shops of this latter type may endeavor, every six months or year, to average their total losses of the different irons used; but apart from their inability to know what the loss on any special iron or scrap may be, they cannot feel thoroughly confident in the correctness of their total losses. Shop tools are cast almost daily for themselves, and to make any attempt at keeping their weights would be costly. And, again, more or less fine scrap gets buried up or carried away in such shops.

Did pig and scrap iron always come clean to the founder's yard, then shops not in a position to have confidence in their

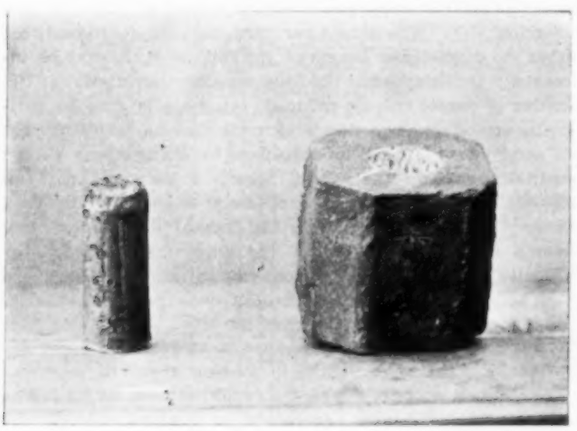

FIG. 1. FIG. 2.

own records could often be fairly guided by what they could learn of others better placed to collect reliable data.

In buying pig iron the furnacemen allow us 268 pounds per ton for scale and sand. How much of this 268 pounds is actual refuse no one can determine accurately. Thus another obstacle arises. When I first learned that there was a strong possibility of chilled pig replacing sand-cast pig, one of the first thoughts that came to my mind was that the founder would at least be placed in a better position to know what iron he was actually receiving from the furnace, or in other words, what percentage of the weight charged to him was actual sand or iron.

In first studying up the casting of pig metal in chills, I could not see anything unfavorable to the universal adoption by founders and steel makers of metal so cast. To make sure, I commenced a series of experiments, in which I was kindly assisted by Dr. R. Moldenke. The result of these researches I gave in a paper before the Western Foundrymens Association at its fall meeting in Cincinnati, Oct. 18, 1897. At that time I thought I had weighed everything necessary to be considered in adopting chilled pig. At your last meeting, Jan. 3, 1898, it was made evident that there was one point I had not gone thoroughly into, and that was the question of oxidation. Mr. Howard M. Hooker made the claim that a greater loss would be incurred by the use of chilled pig than by that having sand scale on it, which was said to afford a protection to the iron against oxidation, or being burned away while being brought to a liquid state. I might have followed this point when conducting the series of experiments cited in my Cincinnati paper, and no doubt would have done so had it occurred to me then that the question of oxidation would be raised against the use of chilled pig. I have no knowledge of the process by which Mr. Hooker has arrived at his conclusions; I can only say that to obtain definite proof that more iron is lost by using chilled than sand-coated pig metal steps that differ from general practice are necessary. Realizing this, I have made a series of original tests embodying 16 "heats" in the twin-shaft cupola which I showed in a paper before this association June 28, 1897, the design of which most of you will remember.

In making the comparative oxidation tests shown in Tables 1, 3 and 4, much care was necessary in preparing the cupola and collecting its refuse. In getting this cupola ready for a "heat," both departments were picked out and daubed up smoothly and then blacked over with graphitic or lead

TABLE 1. COMPARATIVE OXIDATION TESTS OF PROTECTED AND UNPROTECTED IRON SURFACES.

	Heat No. 1.	Heat No. 2.	Heat No. 3.	Heat No. 4.	Heat No. 5.	Heat No. 6.	Heat No. 7.	Heat No. 8.
Kind of metal charged	Sand and Chill rolls.	Sand and Chill rolls	Chill rolls.	Chill rolls.	Chill rolls.	Chill rolls.	Chill rolls.	Chill rolls.
Kind of protection used on coated rolls	Sand scale	Sand scale	Lead wash	Lead wash	Lime wash	Lime wash	Sil. soda	Sil. soda
Weight of unprotected and protected charges	114 lbs	80 lbs	84 lbs	54 lbs	81 lbs	85 lbs	78 lbs	90 lbs
Blast put on	3.36	3.18	3.47	2.20	3.17	2.54	3.04	3.43
Protected iron running	3.44¼	3.37⅛	3.53¼	2.27	3.25	3.00½	3.09¼	3.52¼
Unprotected iron running	3.43	3.25	3.52⅛	2.26	3.23¼	3.00	3.09	3.52
Protected iron all down	4.03½	3.40	4.03¼	2.34½	3.37½	3.11⅜	3.20	4.07¼
Unprotected iron all down	4.01	3.37½	4.03	2.33¼	3.37	3.11¼	3.19¾	4.06
Weight of protected iron obtained	108 lbs. 3 oz.	75 lbs 2 oz.	81 lbs 1 oz.	52 lbs 1 oz.	77 lbs 13 oz.	81 lbs 15 oz	75 lbs 11 oz.	87 lbs 8 oz.
Weight of unprotected iron obtained	110 lbs. 2 oz.	77 lbs 2 oz.	81 lbs 1 oz.	52 lbs 3 oz.	78 lbs 3 oz.	81 lbs 14 oz	75 lbs 12 oz.	87 lbs 6 oz.
Loss of protected iron	5 lbs. 13 oz.	4 lbs 14 oz.	2 lbs 15 oz.	1 lb 15 oz.	3 lbs 3 oz.	3 lbs 1 oz	2 lbs 5 oz.	2 lbs 8 oz.
Loss of unprotected iron	3 lbs. 14 oz.	2 lbs 14 oz.	2 lbs 15 oz.	1 lb 13 oz.	3 lbs 1 oz.	3 lbs 2 oz.	2 lbs 4 oz.	2 lbs 10 oz.

blacking. Such a plan insured that no iron stuck to the sides from the preceding "heats," to be melted down with or change the irons obtained from the respective sides. The bottom was not dropped after "heats," as in ordinary practice, but after the cupola had cooled down the refuse would be picked out from the top downward by hand, and every particle carefully pounded in a pan to discover any fine shot or pieces of scrap that might exist in the burnt coke, dross or slag remaining in the cupola at the close of a "heat."

TABLE 2. COMPARATIVE FUSION TESTS BY IMMERSION OF IRONS SHOWN TABLE 1.

	Heat No. 1.	Heat No. 2.	Heat No. 3.	Heat No. 4.	Heat No. 5.	Heat No. 6.	Heat No. 7.	Heat No. 8.
Time of immersing rolls 2½" diameter.°	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Time of total fusion of sand protected rolls	4.04¼	4.06	4.09⅜	4.10¼	4.06	4.06½	4.04	4.04¼
Time of total fusion of unprotected rolls	4.03	4.03½	4.02⅜	4.02½	4.03	4.03¼	4.02¾	4.03¼
Difference in time of melting	1¼ m.	2⅜ m.	7 m.	7½ m.	3m.	3¼ m.	1¾ m.	1½ m.

°The time of dipping was changed to the unit of 4.00 shown so as to make the table easier of solution. The relative differences, however, were kept exactly the same as originally found.

This was then weighed on fine scales. By this plan not a single ounce of metal that remained as such, could escape being found.

Heats Nos. 1 and 2, Table 1, were charged with rolls that were cast from the same ladle, half being made in sand and half in chill molds, such as seen at Fig. 2. The roll castings were after the pattern seen in Fig. 1,—which it may be said was the same form in which the iron was charged in heats Nos. 3, 4, 5, 6, 7 and 8, as well as those shown in Tables 3, and 4, where rolls are cited. The loss from heats Nos. 1 and 2 ran about 5 per cent for the sand rolls and 3 per cent for the chilled iron. When these first two heats are compared with those of

* Read before Pittsburg Foundrymen's Association, Jan. 31, 1898.

the chilled iron by the protected and unprotected plan seen in heats Nos. 3 to 8, it will appear how unreliable are the data as to how much sand or scale you are crediting to iron when weighing the charges of sand-coated pig irons. To avoid this uncertainty I adopted the idea of taking gray iron cast in chill molds for both sides of the cupola, coating that for one side heavily with some heat resisting material (by giving each three coats and drying them in an oven) and charging the other side with the surface of the chilled gray iron exposed. By weighing the iron before it was coated I knew exactly what

TABLE 3. COMPARATIVE OXIDATION TEST OF IRONS CHARGED ON HIGH AND LOW BEDS OF FUEL.

	Heat No. 9.	Heat No. 10	Heat No. 11.	Heat No. 12.
Kind of metal charged	Chill rolls unprotected.	Chill rolls unprotected.	Chill rolls coated with lead wash.	Chill rolls coated with lead wash.
Weight of charges each side	64 lbs.	73 lbs.	75 lbs.	100 lbs.
Blast on	3·55	4·27	3·42	3·33
High bed running	4·02	4·38	3·50	3·45
Low bed running	4·00	4·33½	3·47¾	3·39
High bed all down	4.11½	4·48	4·03½	4·05
Low bed all down	4·08	4·44	4·56½	3·55
Weight of iron obtaned from high bed	62 lbs. 6 oz.	70 lbs. 7 oz.	72 lbs. 9 oz.	96 lbs. 12 oz.
Weight of iron obtained from low bed	62 lbs. 10 oz.	70 lbs. 8 oz.	72 lbs 14 oz.	96 lbs. 14 oz.
Loss of iron from high bed	1 lb. 10 oz.	2 lbs. 9 oz.	2 lbs. 7 oz.	3 lbs. 4 oz.
Loss of iron from low bed	1 lb, 6 oz.	2 lbs. 8 oz.	2 oz.	2 oz.

weight of iron was going into the respective sides of the cupola. In reality I consider this the only true way of making a comparison between chill and sand-cast pig metals to judge whether scale or sand prevents a loss of iron by oxidation. For heats Nos. 3, 4, 5, 6, 7 and 8 all chilled gray irons were used, the only difference being that I used different materials for coating or protecting the surface of the chill pig rolls which were to be charged as protected irons. Of the three coatings used, lead wash, wet with molasses water, lime

TABLE 4. COMPARATIVE OXIDATION TEST OF STOVE PLATE AND HEAVY IRON.

	Heat No. 13.	Heat No. 14	Heat No. 15.	Heat No. 16.
Kind of metal charged	Stove plate and rolls.	Stove plate and rolls.	¾-inch plate and rolls.	¾-inch plate and rolls.
Weight of charge each side	100 lbs.	65 lbs.	100 lbs.	65 lbs.
Blast on	3:34	3:06	2:20	3:11
Heavy iron running	3:39½	3:12	2:25	3.16¼
Plate running	3:35½	3:07¾	2:23⅛	3:15
Heavy iron all down	3:54	3:21	2:35	3:22⅛
Plate all down	3:44	3:13	2:33	3:21
Weight of heavy iron obtained	96 lbs. 15 oz.	62 lbs. 11 oz.	97 lbs. 2 oz.	63 lbs. 1 oz.
Weight of plate obtained	89 lbs. 14 oz.	57 lbs. 9 oz.	94 lbs. 5 oz.	61 lbs. 11 oz.
Loss of heavy iron	3 lbs. 1 oz.	2 lbs. 5 oz.	2 lbs. 14 oz.	1 lb. 15 oz.
Loss of plate	10 lbs. 2 oz.	7 lbs. 7 oz.	5 lbs. 11 oz.	3 lbs. 5 oz.

wash, which was hardened with salt, and silicate of soda, the lead wash afforded the best protection, which is proven by the less time required by unprotected chills to start and end in melting than the chill pig rolls having their surfaces protected or coated with the lead wash. A study of Table 1 would lead us to conclude that there is no practical difference, on the average, in the loss of clean iron, or chilled pig metal, whether protected by a coating of heat resisting material or not.

Believing an immersion test would furnish a good check on the action of the different protectors, lead, lime and siliciate of soda, I cast and prepared two rolls from each heat, coating one and leaving the surface of the other bare, connecting the two for immersion in liquid iron by a rod M after the plan seen in Fig. 3, and 4, illustrated in the companion paper on "Effects of Phosphorus on the Fusibility and Strength of Iron," also presented this evening. By a study of Table 2, you will perceive that the rolls coated with lead best resisted fusion by immersion, as well as the heat of melting in the cupola. In fact, all the immersion tests made coincided very closely with the results found by the twin shaft cupola experiments and strongly confirm the conclusions drawn above from Table 1.

After completing the tests illustrated in Tables 1 and 2, I thought it desirable to learn what difference, if any, high and low beds of fuel might cause in losses of iron. By referring to Table 3 it will be seen that tests Nos. 9 and 10 were heats having the gray chill pig rolls charged without any coating,

TABLE 5. ANALYSES OF SILICON AND MANGANESE IN LOW AND HIGH FUEL BED IRONS.

	Heat No. 10.		Heat No. 11.	
	Silicon.	Man.	Silicon.	Man.
Height of bed, low side	1·41	·34	1·46	·38
Height of bed, high side	1·36	·31	1·41	·32
Difference	·05	·03	·05	·06

whereas heats Nos. 11 and 12 had the surface of the iron protected with a wash of lead blacking. In all these four heats it will be seen that the loss was slightly greater with the iron charged on the high bed or that side using the most fuel. While this is true, it is to be said that more fine shot and scrap was found in the side having the low bed. In general practice, the chances are that the majority of founders would not go to the labor and expense of endeavoring to collect all this fine shot and scrap so closely as was done with these tests. Hence the loss of iron to be experienced in actual practice can be reckoned as the greatest with founders aiming to economize fuel in an extreme measure, thereby not procuring good hot iron. All experienced founders know that high beds of fuel give hotter iron, but that it melts slower than iron charged on low beds. The difference in the heights of bed coke used in the experiments of this paper was about 12 inches.

The four heats seen in Table 3 having been completed, I next tested stove plate iron in comparison with the roll iron as

TABLE 6. ANALYSES OF IRON IN SLAG FROM LOW AND HIGH BEDS, STOVE PLATE AND HEAVY IRONS.

	Per cent of iron in slag. Heat No. 10	Kind of iron.	Per cent of iron in slag. Heat No. 13	Per cent of iron in slag. Heat No. 14
Height of bed, low side	31.39	Heavy iron	25.13	26.78
Height of bed, high side	24.06	Stove plate	23.56	16.97
Difference	7.33		1.57	9.81

used in previous heats. In selecting the stove plate, I secured it as clean as I could, picking it out from the scrap pile. Notwithstanding this, its loss will be seen, by referring to Table 4, tests 13 and 14, to exceed by about seven per cent that of the more solid heavy iron used in comparison with it.

After testing the stove plate referred to, I then ran two heats having a plate casting ¾ inches thick, broken in pieces about four inches square, and cast it in comparison with the rolls or heavier iron, as seen in tests 15 and 16. This ¾-inch plate iron was cast especially for the purpose and used the day following, so that it was perfectly free of all rust or dirt scale, Its coat being only that of the film of oxide formed on its surface while in the green sand mold. The loss of this ¾-inch plate will be seen to be about five per cent, and this can be taken as a good test for this character of flat-faced surfaces when charged in the form of clean scrap, not exceeding one inch in thickness.

It will be well to state that the iron used for pouring the chilled gray roll bodies used throughout all the heats herein described (form shown in Fig. 1) were taken from one of our

regular shop cupola heats and would average about 1.70 silicon, .045 sulphur, .50 manganese and .10 phosphorus. Owing to this iron being moderately high in silicon and fairly low in sulphur, it would only chill to a depth of about ¼ inch. Such a depth of chill on the surface of the rolls used for the heats herein described, would agree fairly well with that found in general gray pig irons that had been cast in chills instead of sand molds, and I believe all will concede it to be an iron well suited for tests on the comparative oxidation of chilled and sand-cast pig metal.

Since writing the above article, I have received analyses from Dr. R. Moldenke which, as shown in Tables 5 and 6, will prove a very interesting study. Table 5 would show that greater silicon and manganese is lost on low beds than high beds of fuel. But the amount shown is so small that it could not make any noticeable practical difference in grading the softness or hardness of the iron from the respective sides. Another interesting point, which may surprise many, is that the slag which comes from the stove plate iron has a less percentage of iron in it than that which comes from the heavier or chilled gray roll iron. This would indicate that the greater loss of iron by remelting stove plate than is found in heavier irons, is due to the films of oxide or scales of rust and dirt, which, when attacked by the high temperatures of a cupola in blast, either go to make extra slag or escape out of the stack in other forms. This phenomena in slag production is exhibited in actual practice whenever we melt dirty or burnt iron, as all founders well know.

The facts presented herewith suggest that opinions of the past in regard to oxidation of metal are in many cases not well founded, and that where losses of iron have been attributed to oxidation of the metallic iron proper, or a reduction of the metalloids, proper account has not been taken of the dirt, rust or films of oxide that might have coated the pig or scrap iron used. We are led to conclude that if it were possible for us to secure clean iron, free of all sand, rust or film of oxide, the loss of metallic iron due to oxidation, is not as large as has been generally supposed.

Outlook for the Machinery Trade.

The extent to which orders for iron working machinery are being received at sales offices in this city is most encouraging. The majority of the manufacturers' agents with whom we have conversed are in excellent spirits and this based not merely upon expectations for the future, but upon the orders which have already been received.

The sources of business are such as indicate a healthy revival of manufacturing industry. They are not limited to any particular line of work and they come from "Texas and elsewhere." One sellers remarks to us that the class of customers he has particularly noticed are old shops which are being fitted up to compete with new.

Of course the equipment of bicycle manufactories in now hardly a feature of trade in this country, but the boom has not yet subsided in Europe. One large company in this city which has made especial effort in catering to the foreign bicycle machinery trade informs us that this is yet brisk and that new shops are still being started for bicycle manufacturing.

Very few machine tool manufacturers have yet had the hardihood to stiffen up on prices. It is to be hoped that they will soon feel that they are in a position to demand reasonable compensation for their goods, which it is certain that in many cases they now fail to receive. One concern is doing it already, but as this one is overwhelmed with foreign orders it can afford to be dignified toward domestic purchasers. "It is quite a general thing," remarks the representative of this concern, "that 14-inch lathes are now sold as low as $175. But we sold two of them this week, for which we received $215 and $205, respectively. We would not consider an offer of less than $200. Why should we, when we can sell abroad for from $200 to $220, as many as we can make for the next 10 months?"—[American Machinist.

THE accounting department of Westinghouse, Church, Kerr & Co. has been removed from New York to Pittsburg. A farewell dinner was given in New York to Warren L. Murray, auditor, and Gardner W. Kimball, by the engineering force of the company prior to their departure for Pittsburg.

THE BRACKIN PIPE WRENCH.

A new pipe wrench which improves in several important particulars upon the types in common use, is now being manufactured for the market by the Brackin Mfg. Co., of Cleveland. A pipe wrench is probably one of the most abused of tools, being frequently used for bending pipe and for other purposes where its strength is severely tested. The makers of the Brackin wrench, in designing the new tool for its special work, that of turning up pipe, have made strength a prime feature. The jaws and pawl are dropp forged from best tool steel. The lever and yoke are also drop forged, and from good machinery steel. The working parts are tempered and the surface of the lever which comes in contact with the pawl is case hardened. The construction and operation of the tool are shown in the illustrations, of which Fig. 1 is the tool complete and Fig. 2 the four working parts in proper combination, indicating the distribution of strain.

In construction all parts are interchangeable, the combination being studied with a view to the best results in strength. The stationary jaw, as will be seen in Fig. 2, fits securely on the lever and as the strain is upward forms a lock joint. In the operation of turning, the movement of the pawl is downward, practically making another similar joint. This combination relieves the yoke (shown in Fig. 1) from all strain, except where the adjustment of teeth is not fine enough to let the movable jaw down parallel with the lever. In that case, part of the strain will be transferred to the fulcrum in the top of the yoke. In addition to strength, important requisites in a pipe wrench are simplicity, quick adjustment and a construction that prevents locking on or crushing of the pipe. The makers of the Brackin wrench are confident that they have attained all these desirable qualities. The parts are few in number and operation is simple. Adjustment is readily made. By means of the pawl thumb piece seen in Fig. 1 the teeth are disengaged, and the jaw being released, can be readily moved in or out to grip any cylindrical surface from a wire one-eighth inch diameter to pipe of the size for which the wrench is made. When the jaw is open, as after using on a large pipe, and it is desired to adjust for use on a small pipe, it is only necessary to push on the lever, with the end of the movable jaw resting on the floor or against the pipe, a ratchet movement bringing the jaws together. This is only necessary where the operator has the use of but one hand.

FIG. 1.

FIG. 2.

The pawl thumb piece is used merely to disengage the teeth. It bears no strain; as can be seen from Fig. 2 the strain is on the end of the pawl. This is demonstrated by taking the four working parts shown in Fig. 2, without yoke or rivets, and placing them on a pipe in proper position, as in the cut. By pressing on the end of the lever, as in using a wrench, the parts will remain intact, and turn the pipe, showing how well the lock-joint principle has been worked out and how perfect is the distribution of the strain.

By providing a sensitive fulcrum, the locking of the wrench on a pipe is made impossible. It may be easily released by a sidewise turn of the lever, or by pressure on the end of the jaw. Crushing is prevented by the upper end of the movable jaw stopping when it strikes the top of the yoke.

The wrench is made with a bright finish but may be japanned if desired. Its simplicity and quick adjustment will commend it to the plumber and steamfitter and to all establishments in which pipe working is a feature.

A NEW TUYERE.

A new tuyere for use in cupolas and furnaces for melting metals has been patented by M. Hynes, of St. Johnsbury, Vt. As appears from the illustration, it has a curved nozzle at its inner end and is so arranged that it can be turned on the wind pipe so as to divert the currents of air in any desired direction, the primary object being to produce rotary currents of air around the inner part of the cupola, carrying the air into all parts of the body of fuel. The inventor refers to the common straight tuyere, in which the blast is toward the center of the charge,

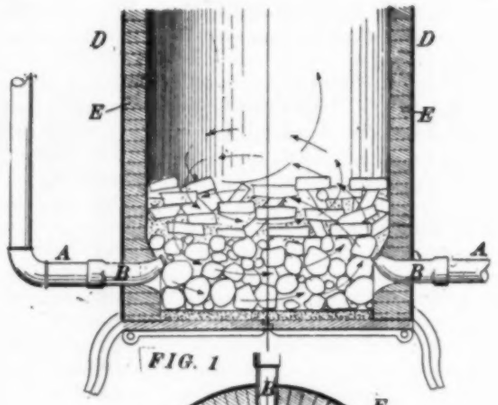

FIG. 1

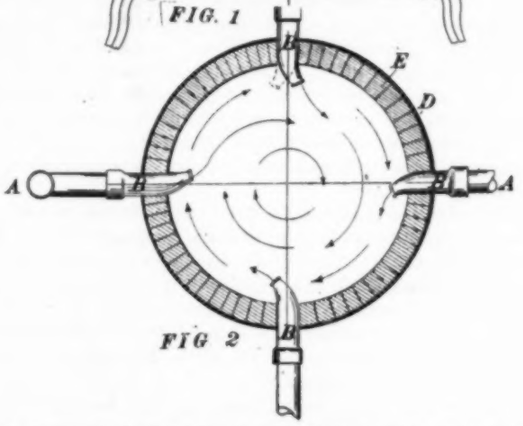

FIG 2

with the result that the fire is much hotter in the center than at the sides, and says that his aim in devising the curved tuyere is to keep combustion alike in all parts of the melting zone and carry the air in rotary currents up through the charge.

The claims for this tuyere are that it carries the air into all parts of the body of fuel, keeping it at a high and even heat, bringing the metal down faster, hotter, and more evenly mixed than the old form of tuyere, and at the same time preventing the clogging of the furnace so that a much larger amount of metal can be melted at one heat, at a saving of from 20 to 40 per cent of fuel. No material change in furnaces or wind pipes is needed to introduce it.

RUSSIA'S pig iron output for 1897 is estimated at 1,857,000 tons, an increase of 240,000 tons over 1896.

INDUSTRIAL SUMMARY.

New Buyers in the Market, and Some of Their Wants :—

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

The American Brass Works, of Newburgh, have been incorporated. Capital, $30,000, and directors: A. Eltinge Anderson, of Kingston; William G. Ladd, of 11 Broadway, and Clarence B. Riker, of New York City.

The Davis Machine Co. has been incorporated at Chicago with a capital stock of $50,000, by Geo. P. Blume, Henry B. Armstrong and Geo. H. Biddell.

The Ferro-Carbon Casting Co., of Philadelphia, was chartered last week, to do a general foundry and casting business.

The Standard Pneumatic Tool Co. has been incorporated at Chicago, with a capital stock of $50,000, to manufacture pneumatic tools. The incorporators are C. A. Williams, Frank T. Kinnear and H. J. Kearns.

The Clinton Iron & Steel Co., Pittsburg, is in the market for two 5,000,000 gallon compound pumps.

New Construction:—

At Cordele, Ga., press reports state William Fitzimmons, of Clinton, Ill., has bought 160 lots and will break dirt for a bicycle factory and novelty works, 40x110, two stories; furniture factory, 30x60, two stories; caramel works, 35x60, two stories; foundry and machine works, 30x50 ft., brick. All factories to be corrugated iron except the foundry and machine works, which will be brick. These enterprises will cost $40,000. Citizens have subscribed $6,000 interest in the enterprise.

The Pennsylvania Co. is remodeling its big boiler house at the Altoona shops, building a 75-foot brick extension to the southwest end, which will more than double its present size. The number of boilers will be increased from six to ten. The dynamo room will be rebuilt and enlarged and one or two new dynamos installed. A portion of the flue shop will be cut off and an extension built to the other end. The new 60-ton cranes for use in the erecting shop will arrive shortly. The improvements will not be entirely completed before Sept 1.

Toledo advices say that the National Malleable Castings Co. has broken ground for a new building.

Among the extensive improvements now being made by the Benjamin Atha & Illingworth Co., at Harrison, N. J., is a new steel building known as the Tower Building. It is 30 feet square and 40 feet high. About 35 feet above the ground is a circular trolley track carried by the roof trusses. The framework of the building is of steel throughout, and the siding and roofing of corrugated iron. The complete contract for furnishing and erecting this building has been given to the Berlin Iron Bridge Co., of East Berlin, Conn.

The Parlin & Orendorff Co., Canton, Ill., writes us that it contemplates the erection of a gray iron and malleable foundry at Canton, during the early spring. The building will be 100 x 330 feet, with an L 80 x 145 feet. It is the intention of the company to make all of its gray iron and malleable castings.

The Maxwell Gas Engine Co., whose gas engine was described in these columns some time ago, has selected a site at Wampum, Pa., near New Castle, and a plant will be erected at once. Officers have been elected as follows: President, William Douthett; vice-president, S. E. Maxwell; treasurer, Dr. Paris Shoaff; secretary, A. W. Gardiner; directors, William Douthett, J. M. Clingan, W. J. Montgomery, Victor Liebrick, Paris Shoaff, A. W. Gardiner, and S. E. Maxwell. The capital stock is fixed at $50,000.

Additions, Enlargements, Removals, Etc.:—

The National Shovel Works, Chicago, are looking for another location, and have been negotiating with Barberton, O., parties, with a possibility that the old American Strawboard Co. plant can be secured.

At Cincinnati, Elzner & Anderson are preparing plans for an addition to the Cincinnati Milling Machine Co., on Spring Grove ave. and Alfred st.

The improvements to the plant of Fraser & Chalmers, Chicago, are to be made at once. They will cost about $120,000, and include machine and erecting shops, 105 x 320, separate

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buildings for the shipping department, perforating department, and the tool and stock room. The latter buildings will be of brick, one story in height, and the machine shops will be of brick and stone, and have steel trusses.

The Manville Covering Co., Milwaukee, Wis., is arranging to build a large addition to its plant. Estimated cost, $25,000.

The Champion Iron Co., Kenton, O., is increasing the capacity of its works by erecting two new buildings. One is a three-story brick building for jail and ornamental iron work and the other, 65x35 ft., one story. The present plant is insufficient for the company's business demands.

Fires and Accidents:—

Fire completely destroyed the large brick building and contents of the F. A. Walsh Co., manufacturers of packers' and grinders' tinware and tinners' machinery, Milwaukee, Wis., Jan. 22. The loss is estimated at $300,000, $225,000 of which is on stock and machinery and $75,000 on building. The insurance is $250,000.

The explosion of steel which was being rolled in the mill of the Hart & Cooley Co., South Chicago, Ill., Jan. 27, wrecked the electric light plant, seriously injured two employes, and Mr. Cooley slightly.

The Ewart Building, 11 to 23 S. Jefferson st., Chicago, was entirely destroyed by fire Friday, Jan. 28, incurring a loss on the building of $150,000, insurance $75,000, together with losses to the various concerns located in the building, as follows: Blacksmith shop of John Finkle, loss, $15,000; Wire Fuse Co., loss $15,000; Sanderson Bros. Steel Co., loss $15,000; Torris Wold & Co., loss $15,000; Mills Novelty Machinery Co., loss $5,000; Wilson Davis Bicycle Co., loss $15,000; Barnum Mfg. Co., loss $2,000; Wheelock, Abbott & Co, loss $10,000; Carl Anderson, machine shop, loss $15,000; Independent Cracker Machine Co., loss $10,000. Aside from these the building was occupied by several small firms, agents and jobbers, who also suffered from the fire.

General Industrial Notes:—

Car business: Mobile & Ohio, 200 cars, from Mt. Vernon Car Co.; Southern Pacific, 500 box cars, with Ensign Mfg. Co.; Pittsburg & Western, 500 cars, may be of steel; Canadian Pacific, 20 tourist cars; Florida, Central & Peninsular, 250 ventilated fruit cars. "Soo" Line has placed an order for 5 locomotives. Dora Furnace Co., Pulaski, Va., has bought one narrow gauge switching engine and one broad gauge consolidation engine from the Baldwin Locomotive Works.

A Louisville, Ky., dispatch says that the trade in farm wagons and farm tools there is immense. The Kentucky Wagon Co. in eight months has earned $200,000 above its dividends and fixed charges for the entire year, besides retiring $25,000 of its bonds. It is turning out and selling wagons at the rate of 25,000 a year, this being the best business in its history.

At Bellefonte, Pa., local iron men are negotiating for the purchase of the Karthaus ore fields, lying partly in Clearfield County and partly in Center County. The mines are 60 years old, but were never operated to any great extent, owing to their inaccessibility.

At New York, Judge Wheeler, of the United States Circuit Court, sustained the validity of the electric railway motor suspension patent controlled by the General Electric and Westinghouse companies, and ordered an injunction against the Union Railway Co., of New York, and the Walker Co., of Cleveland. The patent sustained is said to cover the method which has been adopted universally for the suspension of electric car motors for street railways and other railways.

The Buckeye Iron & Brass Works, of Dayton, has just secured the contract for a complete 80-ton cotton seed oil mill, to be erected at Torreon, Coahuila, Mex.

The directors of the Pittsburg & Lake Erie Railroad have awarded contracts for the construction of 600 new cars to cost almost $400,000, 100 cars to be steel hopper ore cars, each with a capacity of 80,000 pounds, similar and in addition to the 50 experimental cars ordered recently at a cost of $50,000. The order for the steel cars was given to the Schoen Pressed Steel Co., of Allegheny. They will be built on the designs of the 100,000-pound Bessemer ore carriers, will be 30 feet long and will weigh about 30,000 pounds each. Five hundred of the new cars contracted for will be wooden gondola cars, each with a capacity of 60,000 pounds. They were ordered from the Michigan Peninsular Car Co., of Detroit, Mich.

The Plant of the Harvey Steel Car Co., Harvey, Ill., including 17 acres of land, one brick and several frame buildings, with all the equipment, was sold under a foreclosure decree at the rooms of the Real Estate Board, Chicago, Jan. 28, for $150,000. Charles W. Allen, representing the first mortgage bondholders, bid in the property. The foreclosure was to satisfy a mortgage of $125,000 with accrued interest and costs amounting in all to $170,000. The plant has not been in operation for two years.

The Davis & Egan Machine Tool Co., of Cincinnati, O., reports a general improvement in trade, a great many orders having been taken with the last few weeks, in the Western and Central States. It also reports a general improvement in trade from England. The company has also just taken a large order from Amsterdam, Holland. Trade in Norway and Sweden seems to have fallen off, while in Russia, Germany and France it remains good.

S. E. & H. L. Shepherd, of Rockport, Me., have in use an electrically operated cableway built by the Lidgerwood Mfg. Co., of New York, in which electric motors are installed in twins, operating the hoisting drums, located near the head tower. The machine works with great smoothness. It employs the standard Lidgerwood carriage and the Miller fall rope carriers, being the only practical form of electrical cableway that has been introduced.

At Reading, Pa., Orr, Painter & Co.'s stove foundry resumed operations, after being idle nearly a month. The Reading Foundry Co., for which receivers were appointed, is to resume at once. The Reading Railroad's machine shops go on seven and a half hours per day, five days a week.

The Oliver & Snyder Steel Co.'s Edith furnace, at Allegheny, Pa., is to be rebuilt. The stack is to be 100 feet high, and the bosh 20 feet. Sixteen tuyeres will be used and the furnace will have a daily capacity of 400 to 500 tons.

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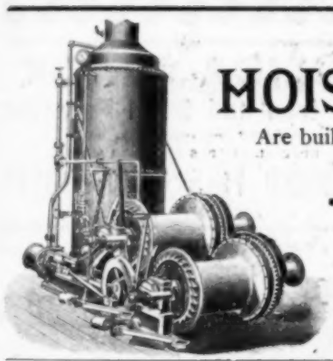

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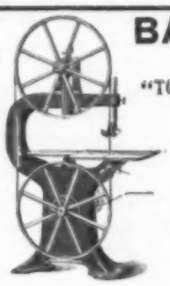

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The Dunbar Furnace, at Dunba, Pa., which is just changing managers has been in blast steadily for a year. The Semet-Solvay ovens, in connection with the plant, have been operated uninterruptedly since their completion in 1896. The new electrical power plant recently referred to is about to be installed.

The Bloomsburg (Pa.) Car Mfg. Co. has been awarded the contract to build 100 gondola cars for the Orange Free State Street Railway Co., of South Africa.

The Westinghouse Electric & Mfg. Co. is to illuminate the catacombs of Rome. The order was placed with the company's Paris representative, and the East Pittsburg plant is to turn out generators to fill the contract. Isolated electric plants are to be placed in each of the six subterranean cemeteries, each supplying current for 450 incandescent lamps.

The Glover Foundry, at New Castle, Pa., was sold at sheriff's sale last Thursday, to O. H. P. Green, for $2,600. A mortgage for $1,899.75 was also assumed.

The Lauth furnaces recently installed at the plant of the Michigan-Peninsular Car Co. at Detroit has been making good records. The first turn the furnace was in operation 50,000 lbs. was the output and the second turn (night) 71,000 lbs. The iron is soft and the tonnage in the mill has been increased from 60 tons per day to 100 tons. Eleven more furnaces are to be added, making 13 in all.

The Reading Iron Co., of Reading, Pa., has just received contracts for three new cotton presses. They are for shipment to Louisiana, and one, with its bailers, will weigh 400,000 pounds. It will press 1,200 bales per day.

The Meadville Iron Works, at Meadville, Pa., owned by Geo. B. Sennet, of Youngstown, O., are offered for sale. The plant is well equipped.

The Steel Tired Wheel Co., a consolidated corporation which early in 1897 bought six or seven important car wheel companies, including the Allen Paper Car Wheel Co., of Chicago, has declared a dividend of five per cent on its preferred stock for the 10 months ending Dec. 31, 1897, which is at the rate of six per cent per annum. The stock is six per cent cuumlative. Geo. M. Pullman was quite largely interested in this enterprise, as appears from the list of his holdings filed in court by the executors of his estate.

At Pottstown, Pa., the Ellis & Lessig Steel & Iron Co. proposes to erect an open-hearth steel plant and universal mill near their present works in this borough. It will give employment to several hundred men.

The Eagan Company, of Cincinnati, O., has just made a shipment of 12 car loads of woodworking machinery to the Russian Government, St. Petersburg.

At Wheeling, W. Va., the men in the plate mill of the Wheeling Steel & Iron Co.'s plant struck against the reduction in wages Jan. 26.

The La Belle Iron Works, of Wheeling, W. Va., have recently installed two electric traveling cranes manufactured by Pawling & Harnischfeger, of Milwaukee, Wis. The larger one is of 20 tons capacity and has a span of 50 feet. The other one has a capacity of five tons and a span of 75 feet.

It is reported that the Pennsylvania Co. has brought injunction proceedings against the city of Lima to prevent it from issuing $98,000 bonds for the purpose of securing the Lima Northern shops and an enlargement of the Cincinnati, Hamilton & Dayton shops. The bonds were issued for park purposes and the Pennsylvania Company, as a taxpayer, is going to prevent them from being used for any other purpose.

At East Liverpool, O., stockholders of the Salineville Fur-

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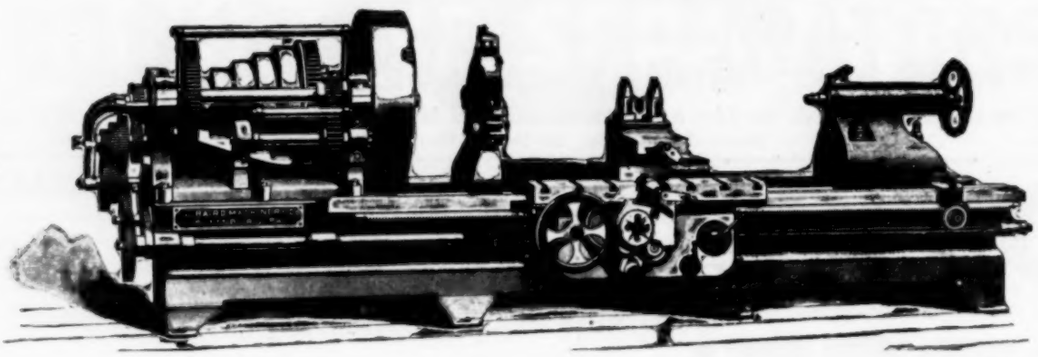

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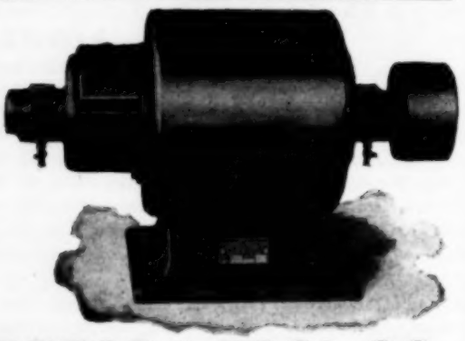

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nace Fire-Clay Co. applied for an injunction restraining the sale of the company's property under a judgment for $36,000 secured by Thompson & Co., bankers. They claim that the sale under execution would result in needless sacrifice. Application is also made for a receiver.

W. S. Rockwell & Co., New York, have recently erected one large double-end copper heating furnace and one double-end copper annealing furnace for the Rome Brass & Copper Co, Rome, N. Y. They also report that they are fitting up some large works with their improved fuel oil burning appliances.

The S. R. Smythe Co., Pittsburg, has been awarded the contract for the remodeling of the Bessemer furnaces and rail mill of the Lackawanna Iron & Steel Co.

J. B. & J. M. Cornell, of 26th st. and 11th ave., New York, turned out last week at their Cold Spring foundry, a perfect casting weighing 22 tons, for an engine cylinder, and have booked orders for a large tonnage of heavy sugar making and other machinery castings. This firm has taken over the old West Point Foundry and is thoroughly remodeling and modernizing the plant. Within the next 30 days it will have completed the increase of the cupola melting capacity to 60 tons per hour, and in addition to this has two large air furnaces. Adding this capacity to the New York City plant makes this firm especially conspicuous, if not the largest, among producers of general iron castings.

Philadelphia advices are that the Pennsylvania Steel Co. has laid aside for the present its plans for raising fresh capital. Business has improved greatly since the announcement was made that such a plan was desirable. The stockholders did not take kindly to the idea of contributing fresh capital, and present receipts are sufficient to carry on the business. The company for the last three months has been doing a business of $1,000,000 to $1,250,000 per month. The February interest, amounting to $50,000, will be taken care of, as will also probably the $100,000 interest falling due in March. If business continues to improve security holders are not likely

to be called upon to give financial assistance to the company, at least during the first quarter of the year. Usually a shutdown is made about the first of the year, but the company has not done so this time, and is now behind in its orders. December was the best month of 1897 and the improvement has since continued.

W. S. Rockwell & Co., the New York furnace builders, have recently erected one of their large double-end plate heating furnaces for the Dickson Mfg. Co., Scranton, Pa

James Bonar & Co., Carnegie Bldg., have closed a contract with the Shenango Valley Steel Co., of New Castle, Pa., for separators for its new steel mill, and also the tin plate mill consisting of eight 8-inch, three 14-inch and one 16-inch Sweet's direct steam separators.

The Pittsburg Wire Co. has elected the following officers: President and treasurer, Thomas Walker; secretary, James A. Farrell; directors, Alex. Dempster, Thomas Walker, James H. McCrady, Joseph Kountz and Thomas W. Fitch. The latter is general superintendent of the works at Braddock. Every department of the plant is in operation, with 600 men employed. The plant has a record of 315 working days for 1897.

William Goldberg has purchased the Glover Foundry at New Castle, Pa.

The Cambria Iron Co., of Johnstown, Pa., has elected the following directors for the ensuing year: Joseph M. Bacon, Robert F. Kennedy, Charles S. Price, David Reeves, Powell Stackhouse, Edward T. Stotesbury, John W. Townsend, John Lowber Welsh and R. Francis Wood.

The Indianapolis, Ind., plant of the National Malleable Iron Co. for the first time since it was built has all the furnaces, eight in number, in full operation, and is now giving employment to over 600 men, the largest number in the history of the works.

At a meeting of the stockholders and directors of the Minnesota Iron & Steel Co., of Minneapolis, the following were elected directors: Horace W. Lash, Thomas Lowry, Clinton Morrison, M. B. Koon, F. D. Underwood, F. C. Barrows, F. G. James. Subsequently the directors elected Mr. Lash, president; Mr. Morrison, vice-president; Judge Koon, treasurer; Mr. James, secretary.

At Muskegon, Mich., efforts to reorganize the rolling mill company have not succeeded and the mill is likely to remain idle indefinitely.

The La Belle Iron Works, Wheeling, W. Va., manufacturer of La Belle tin and terne plates, has almost completed the addition to the tin plate plant, which will double its capacity. The new equipment includes two electric traveling cranes, installed by Pawling & Harnischfeger, of Milwaukee, Wis. The cranes are of special make, built to stand the heaviest kind of work. Each one is of the three-motor electric type. The Schultz Bridge & Iron Co., of McKee's Rocks, Pittsburg, has the contract for the buildings, which will be of steel and iron. A 500-h. p. Corliss engine is also being installed. The additions are expected to be completed in February.

The Pennsylvania Tin Plate Co., New Kensington, Pa., is running full time in all departments, with excellent prospects for the future. The company recently added two new mills.

Some of the equipment for the Old Meadow Rolling Mill Co., Scottdale, Pa., has been bought. The Frank-Kneeland Machine Co., of Pittsburg, will furnish the rolls; the Lloyd-Booth Co., of Youngstown, will furnish shears and lathes, and Lane & Bodley, of Cincinnati, the 36 x 60 Corliss engine.

THE substitution of stand-pipes for wooden tanks at water stations by the Chicago, Rock Island & Pacific Road, is so far as we know, an innovation in this class of structures. The larger use of iron or steel, to the supplanting of timber, wherever there can be realized an economy in investment or a gain in efficiency, is quite in keeping with modern ideas, as evinced by its gradually increasing adoption in bridge and car construction, and in fact throughout industrial lines generally. We understand that the Atchison, Topeka & Santa Fe Co., impressed with the experience of the Rock Island, will follow the example set by that road in the use of stand-pipes at its water stations.—[Railway Review.

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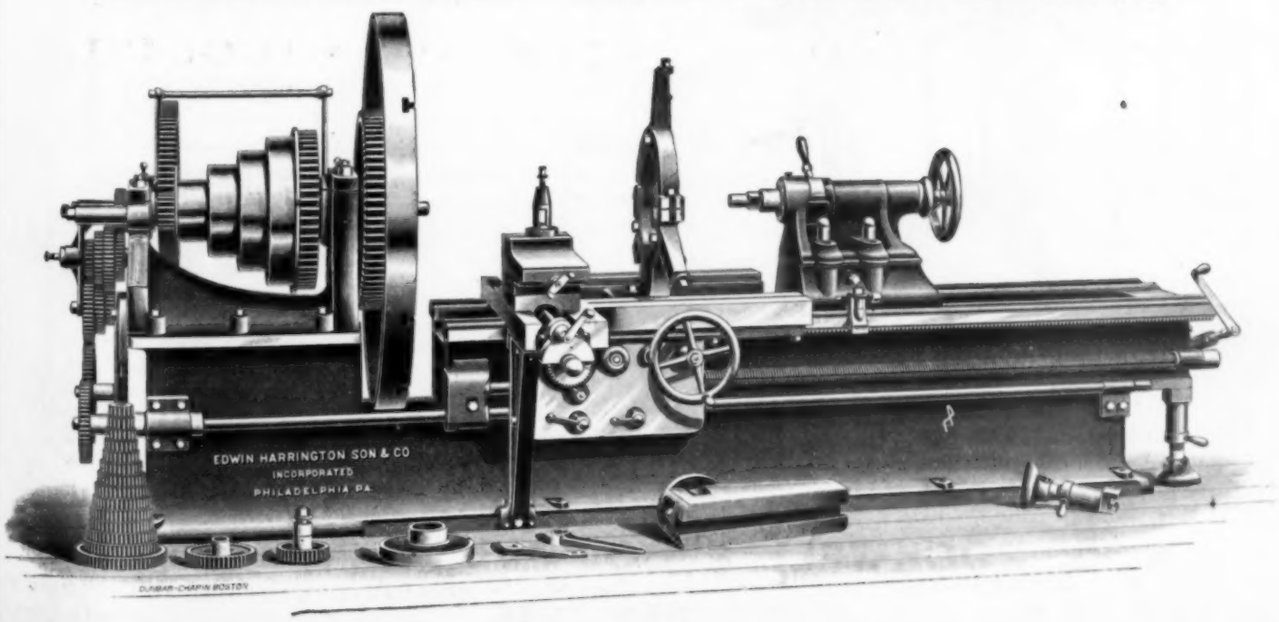

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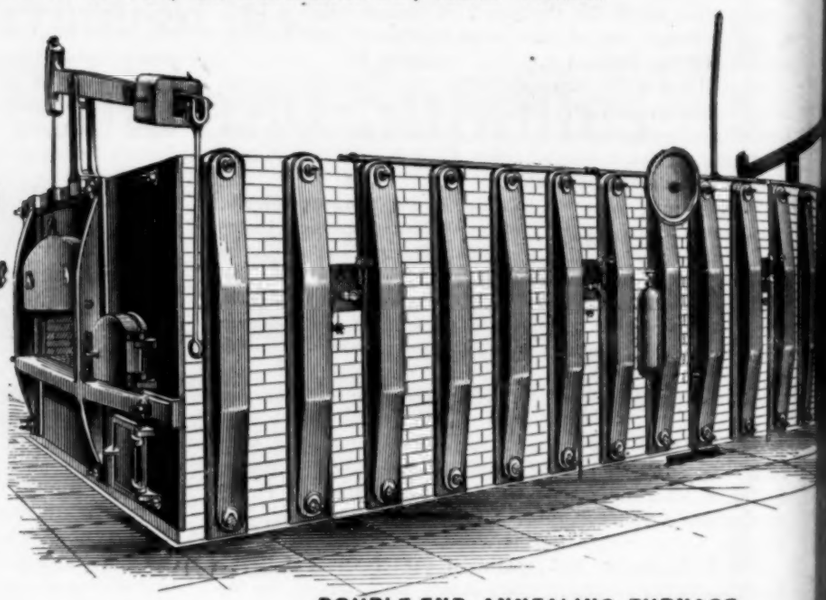

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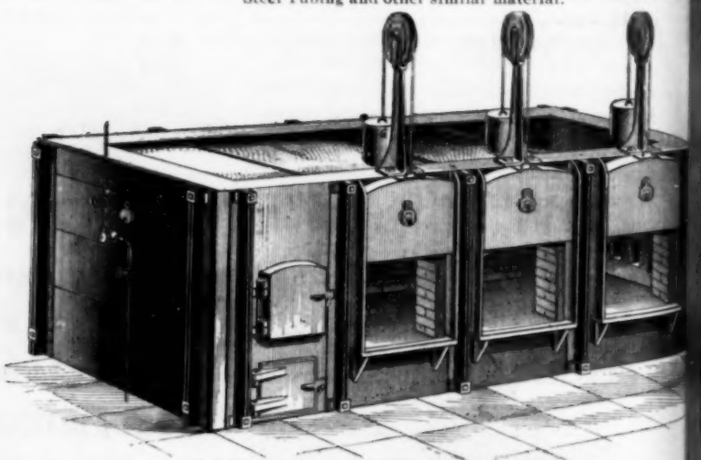

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